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ABSTRACT

Organized in three parts, the nine brief chapters of this report aim to raise the information levels of policy makers and the public concerning several educational issues. After the first chapter's brief introductory indication of the purpose of the publication, chapter 2 provides an overview of changes that have marked the American scene since the mid-1960s, as well as changes to come by the end of the century. Chapters 3 and 4 review, respectively, research bearing on effective educational practices and schools, and findings of recent studies of the human brain. Chapter 5 discusses student learning styles and innovative approaches to learning, while chapter 6 explores problems and prospects of computer uses in education. Chapter 7 focuses on issues concerning adult education and specifies eight goals for adult learning in the year 2000. Chapter 8 explores sociocultural forces reshaping values held by the American people and investigates issues of values education and moral development. Chapter 9 concludes by urging readers to become involved in setting a new fashion for others to follow in creating a more sensible life, thereby enriching the cultural heritage. (RH)

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Exploring Educational Futures

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Part One

Anticipation Through Understanding

CHAPTER ONE

Out of the Darkness

An Introduction by Franklin Mullen, Chairman, Urban Ed 2000

Perhaps we are intellectually, spiritually and metaphysically phototropic and our ultimate instincts for survival and fulfillment will be guided by and drawn toward the light of understanding.

We are impelling ourselves into an information era with the urgency typical of an infected organism desperate to develop antibodies. The perception that the management of our resources is in a precarious state of imbalance is prevalent. Disenchantment and alienation are skyrocketing, and young people are finding it increasingly difficult to invest their hopes and energy in an uncertain future clouded further by confrontation, polarization and the paralysis of special interests.

We are facing a collapse of the teaching profession, and if we allow that, who will guide young people into the process of learning and growing in a way that is both healthy for them and healthy for a society in which the family support system is becoming increasingly less effective?

With this awareness, we have apparently made the collective subconscious decision that to master science at a rate faster than we master ourselves is courting tragedy. Our social programs and governmental interventions appear as mere expedient Band-Aids being placed and re-placed on symptoms as a futile resistance to a steadily deteriorating quality of life — a race against the disintegration of our social fabric in which we are losing ground.

No wonder we have concluded that decisionmakers either lack information or are unable to use it well. We face the need to raise the general information level and improve critical thinking and decision-making skills.

Education redefined, which includes all communication and information handling and everything that occurs from cradle to grave and intrauterine, is at the causal level and is the major source of hope to reverse these feared trends.

Many of us have participated as members of various institutions in the introduction of useful ideas in response to the needs of changing times only to be frustrated by inertia and the turfdom or competitiveness of those who were not involved and were apprehensive of the possibility of hidden agendas.

Out of this frustration was born the concept of a *neutral* vehicle in which we could all participate, independent of our special interests, a "Switzerland" of emerging consciousness where truth could be spoken and information shared without reservation. Therefore: Urban Ed 2000.

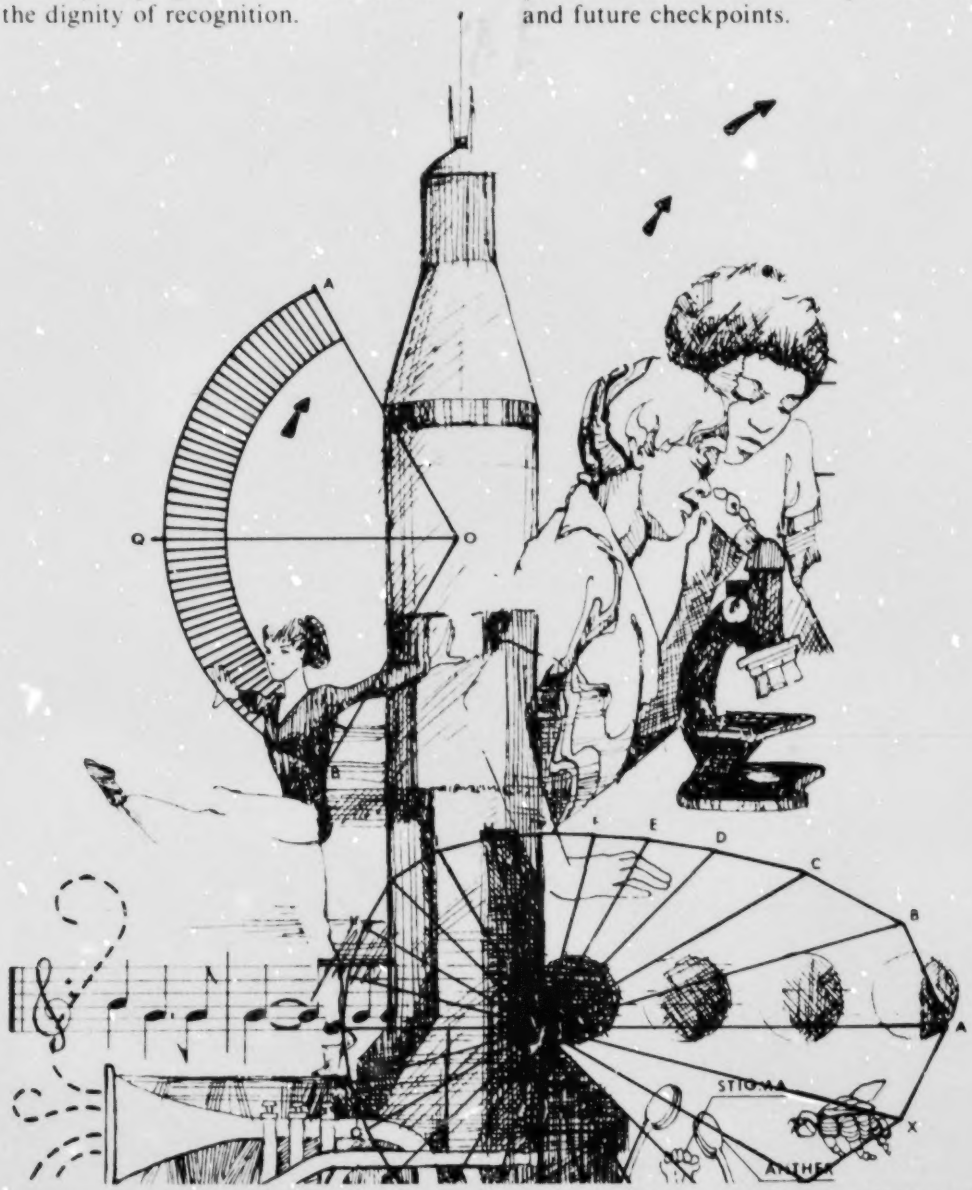
Through conferences and seminars we have advertised for all who are awake and aware, and know and care, to share with us their thoughts about the future. Children born in the early 1980s will be graduating from secondary school in the year 2000. What will the world be like then and

how ready will they be to take their place in it?

We would like to collect the most advanced thinking around the planet and publish it annually without advocacy. We would like to serve existing institutions by providing a neutral medium through which they can derive synergistic benefits. And we will serve responsible emerging institutions by helping in their efforts to achieve the dignity of recognition.

This publication is but a sample, a small first step in an effort to assist in raising the information level of policymakers and those who influence them. With your help, as contributor or reader, this annual "catalog of options" will grow to help us align our intelligence with our vision.

These pages include the ideas and programs of many thoughtful and dedicated persons. You are welcome to join us in this and future checkpoints.



Projection: If we continue with our present trends and priorities are we charting a disastrous collision course of inexorable forces?

8

CHAPTER TWO

Getting There From Here

A new civilization is emerging in our lives, and blind men everywhere are trying to suppress it.

— Alvin Toffler
The Third Wave

We are clinging to the known past in fear of the unknown future.

— John Naisbitt
Megatrends

A child born in 1983 will be graduating from high school in the year 2000. Of course, he or she will reach that apex only if our formal education system remains structured pretty much as it is — if children continue to enter kindergarten at the age of five and proceed through 13 years of graded, sequential schooling.

However, the society into which the 1983 child will be born is in the throes of unprecedented change, socially, economically and politically. Consider:

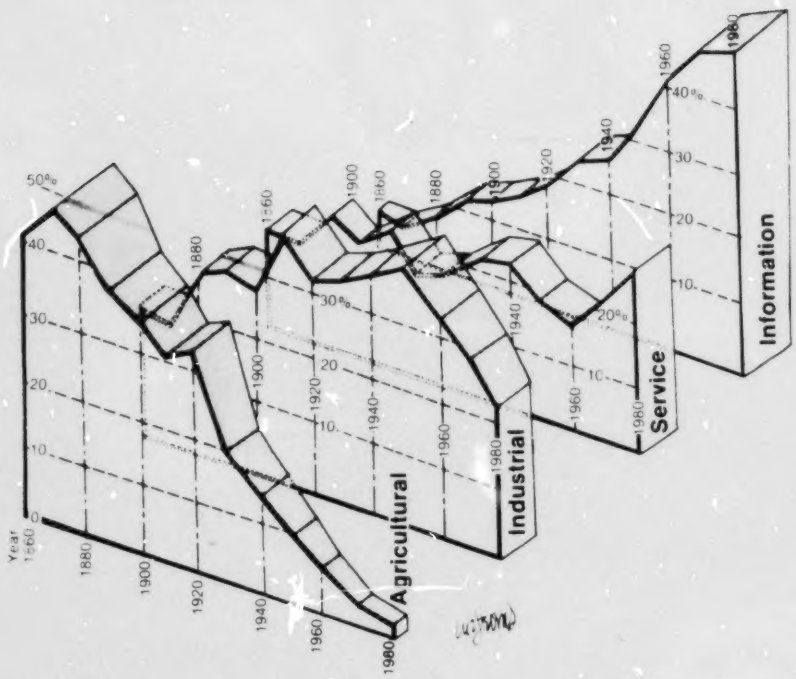
Socially, the traditional nuclear family of a working father, at-home mother and one or more children — 70 percent of all American households during the Eisenhower presidential years of the 1950s — now accounts for only 15 percent of all households in the nation. Single person households grew from 10 percent in 1950 to 23 percent in the late 1970s.

Economically, we have moved from affluence to inflation. Americans are driving smaller cars, retaining them longer and using them less. Mortgage interest rates, which peaked in mid-1982, are still so high that many young families are being denied or forced to defer the great American dream of owning their own home. Lasting employment is no longer a near certainty, even for college graduates.

Politically, power has shifted from the nation's capitol, from Congress and the President, to the states and local communities. And party politics has given way to issue politics. Legislators at all levels increasingly cater to the demands of special interest groups. As John Gardner has observed, we've become so pluralistic that the parts are fighting against the whole.

Chiseled into a granite block next to an entrance to the National Archives in Washington, D.C., are the words, "What is past is prologue." Before looking ahead 17 years to the kind of world we may be living in at the turn of a new century, and the kind of educational opportunities that should by then be available, it's both intriguing and instructive to look back over the same time span and recall some of the changes that have marked the American scene since the mid-1960s.

Individually, we have undergone what social analyst Danial Yankelovich terms a transformation from a self-denial to a self-fulfillment ethic. Millions of Americans have turned away from the long-standing tradition of seeking a successful life through work, spouse and children, suppression of frustrations and a sense of loyalty to job, family and community. Instead, they have redefined the meaning of success and modified both their attitudes



As the number of agricultural and industrial jobs decline, service and information jobs increase, 1860-1980. (From *Colorado Business,* July 1982. Reprinted by permission.)

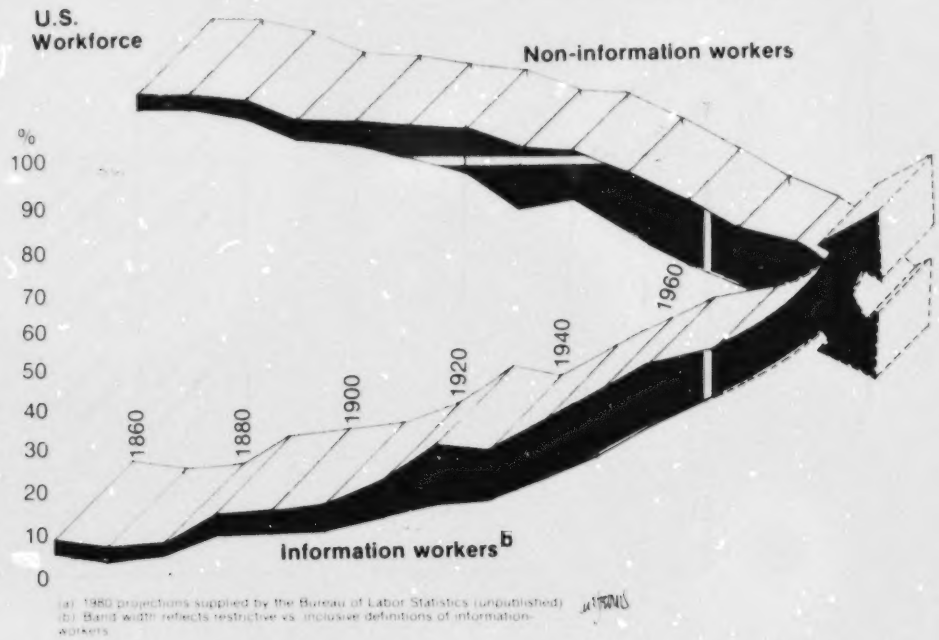
and approaches to career, family, leisure and relationships. They are experimenting with different lifestyles, reassessing what is important to them, seeking out new experiences.

Collectively, we are now in transition from an industrial to an information society. A dazzling array of electronic technology has made possible instant communication and an explosion of information. Researcher John Naisbitt says, "We now mass-produce information the way we used to mass-produce cars." The popular futurist Alvin Toffler sees this transformation from industry to information as a "third wave" in the history of civilization, the first having been marked by the advent of agriculture and the second by the industrial revolution.

Specifically, there have been substantial changes in the ways we relate to one another, what we expect and demand of our federal government and in the vitality of our economic system.

As Theodore H. White notes in *America in Search of Itself,* first youth, then blacks and other minorities and finally women revolted: youth against the war in Vietnam, minorities against a century of unmet promises and women against centuries of male domination.

At the same time, the federal government increasingly intervened into the daily life of more and more of its citizens. First came a variety of new entitlement programs — anti-poverty measures, Medicare, aid to education, for example. Then came a wave of regulations, including minority hiring quotas and health and safety standards. White observes that "government had ceased to be, as Franklin Roosevelt once saw it, the umpire between business and labor, between rich and poor; it had become the nourisher of dependency."



Changing U.S. labor force, 1860-1980, from industrial to information. (Reprinted by permission from *Colorado Business,* July 1982.)

Yankelovich believes three factors contributed to a general economic decline: (1) the unanticipated increasing annual cost of new federal entitlement programs; (2) the increasing cost of imported oil; and (3) reduced American competitiveness in world markets, the automobile industry being a prime example.

And the declining economy, combined with the humiliations of Vietnam and the Iranian hostage crisis, contributed to a growing sense of reduced American power and prestige.

From Conant to Crisis

In the mid-1960s, the most widely known and highly regarded voice in American education undoubtedly was that of the 72-year-old president-emeritus of Harvard University, James B. Conant. He had just completed a series of studies that began in early 1959 with a post-Sputnik report on the American high school and included a few years later the prophetic *Slums and Suburbs.*

Although Conant correctly anticipated and alerted education policymakers to such developments as rising minority group dissatisfaction and an increasing federal role in education affairs, even he failed to foresee the scope and magnitude of what was to come:

Equal Opportunity. Schools became a focal point for many of the changes that took place in American society after President Kennedy's assassination in late 1963. Frustrated minorities — blacks, hispanics, women and the handicapped — increased their demands and expectations of public education as a way to expand and extend their opportunities. Through legislation and litigation they gained more equal educational opportunities. Compensatory and bilingual education programs were developed, handicapped students were brought into the mainstream of schooling, women seemed to achieve greater equity and

school finance reforms appeared to bring more fairness to the system as a whole.

Increased Demands. At the same time, schools were increasingly expected to address a greater number and variety of needs. Centuries of racial conflict were to be alleviated through school rather than community desegregation. Some children were hungry, so the schools were asked to feed them — breakfast as well as lunch. To prevent childhood diseases, children were expected to have proof of immunization before they could enter the schoolhouse. To promote the work ethic of a declining industrial society, schools were encouraged to develop curricula in career education. Even such seemingly private aspects of life as sex and prayer engendered school-related controversies. Americans developed a penchant for turning to their schools to make up for the deficiencies and failures of families and other social institutions.

Professional Fragmentation. The concept of professional unity within the education community was shattered as teachers, too, became more militant. Teacher unions grew rapidly, strikes multiplied and collective bargaining for teachers became law in many states, another example of special-interest politics.

But the governance and administration of education also was being fragmented, thanks largely to the proliferation of federal and state categorical aid entitlement programs, each with its own constituency, its own rules and regulations, its own reporting system. The funds all came from the same well, but without a coordinated flow or means of delivery. The result, at the local school district level was an administrative nightmare.

Changing Clientele. Quantum changes in the nature of American society, particularly in family life, have resulted in schools being expected to serve students from backgrounds and experiences that differ significantly from those of children only a generation ago. A few specifics:

- Smaller families. Women are now having their first child later in life, are spacing children closer together and having fewer of them. This means the average student today has fewer brothers and sisters with whom to relate. At the same time, there has been a decline in the number of "extended families" — those that include additional family members such as grandparents in the same household.
- More working mothers. A majority of mothers are now part of the nation's workforce. They no longer are home during the day. Millions of children now go from school to a home without an adult present.
- More single-parent families. An estimated 40 percent of all school-age children now spend at least part of their childhood in a home with only one parent, usually a working mother.
- More pre-school experiences. An estimated 50 percent of all pre-school-age children now spend some time in some kind of institutionalized setting — child care center, nursery school, etc.
- Impact of mass media. By the age of 18, the average person today has spent more time viewing television than attending school or being with his or her parents. And the increased variety of mass media — television, literature, music and films — that are so readily available to children and youth today often ranges in quality from the bland to the vulgar.

In addition to these consequences of economic necessity and the self-fulfillment ethic, as increasing numbers of children who a generation or more ago had been discarded remain in school, a gap has developed between achievement expectations and reality. The focus of Conant's reports was quality schooling. But since the mid-1960s the nation has chosen to emphasize equality of opportunity. The result, as psychologist Jerome Bruner observes: "We did not fully grasp the importance of keeping alive our interest in quality while working on the achievement of

equality. So now we are distressed by falling standards."

Naisbitt believes the current generation of high school graduates is the "first generation in American history to graduate less skilled than its parents."

View of the Future

Although pessimistic views of the future seem to be in vogue, some analysts of the contemporary scene believe encouraging signs are emerging.

Yankelovich, for example, sees the American people moving away from the self-fulfillment ethic of the 1970s toward what he calls an "ethic of commitment." Learning through often painful experience that true self-fulfillment is subverted by self-indulgence, Americans are gradually evolving new social principles, Yankelovich believes, shifting their focus away from self and toward linkages with the outside world. The new ethic he sees emerging will preserve important older values from the self-denial era and safeguard certain new ones won over the past decade. For example, he anticipates that we will have both political freedom and greater individual autonomy.

Toffler believes that in a "third wave" civilization people will not only have the opportunity to be more creative and flexible, but that they will be expected to be so. He sees people thriving in new modes of society and consciousness, creating the "first truly humane civilization in recorded history."

As for the future of education, those responsible for planning and policymaking might begin by considering some present conditions that promise to persist for many years to come. In constructing scenarios for their study of the future of the world, *Seven Tomorrows*, Stanford University researchers identified a dozen such conditions that constitute the "momentum of history" and constrain both present and future behavior.

Following are a few such preconditions that provide some parameters for speculations about educational endeavors over the next two decades:

- *Continued divergence of values and lifestyles.* The Stanford researchers believe that "whether we continue to be rich or contract into regional pockets of depressed economies," the movement toward a diversified, "heterogeneous stew of peoples, values and goals," will continue. There appears to be little or no prospect that the nuclear family will ever again dominate the American scene. Instead, we will continue to have lower birthrates, many single-parent families and working mothers.

- An aging population. Lower birthrates mean fewer students and workers and proportionately more older citizens. A "graying" population will demand increased public concern for the needs of the elderly and a correspondingly reduced focus on the needs of youth. And a smaller work force will be called upon to provide the tax dollars necessary for public services for both.

- *Slowing economic growth plus burdensome debt.* The Stanford researchers found that strong economic growth would require an unlikely combination of conditions, including a growing workforce. In addition, they noted that as the 1980s began public and private debt in America exceeded $5 trillion. Not only will education have to compete with the elderly for public support, but the amount of public funds available for public services may be further limited by economic constraints.

- Less child-centered society. Toffler believes that as public attention shifts from youth to the elderly, as more working mothers devote less energy to their children and as economic realities defuse expectations that children can do better than their parents, there is and will continue to be far

less focus on the needs and wants of children. Parents will become less permissive, he believes, and adolescence will not be as long or as painful a process as it has been. But less parental and public concern for children may well be translated into less interest in schools and education.

- *Changing character of school enrollments.* Demographic studies and enrollment projections indicate that over the next decade or more there will be proportionately more minority students, primarily black and hispanic, attending the nation's schools. Historically, these are the students our schools have served least effectively. And their parents often lack political influence. In other words, people with less clout are becoming those with the greatest stake in public education.

- *Disenchantment with education.* In *An Incomplete Guide to the Future*, Willis Harman of Stanford observes that even as more of the workforce becomes better educated the number of meaningful and interesting jobs is declining. As a result, he warns, increasing numbers of Americans may become disillusioned with education unless challenging new employment opportunities are created.

Those who are concerned about shaping educational policies obviously should take such constraints into consideration when planning for the future. In addition, before anticipating the consequences of recent findings about how people learn or the potential impact of computer technology on parents, students and teachers, they might take a hard look at what could be done with what we already have — how much better our existing schools could be.

New Directions Transforming Our Lives

In his book, *Megatrends,* researcher John Naisbitt identifies 10 trends that are reshaping American life. Each has implications that will result in profound changes in the way we live and think, Naisbitt believes. For example, agricultural societies look to the past for patterns of sowing and reaping, industrial societies look to the present as the bottom line, but the information society will look to the future, for the principal role of information-gathering is to guide future actions and produce future results.

Following are Naisbitt's 10 "megatrends":

From	To
Industrial society	Information society
Forced technology	High technology balanced by human response
National economy	World economy
Short-term planning and actions	Long term planning and actions
Centralization	Decentralization
Institutional help	Self-help
Representative democracy	Participatory democracy
Hierarchies	Networking
North	South (Sunbelt)
Either/or	Multiple option

In addition, Naisbitt foresees a move from physics-oriented technologies to biology-oriented technologies, from a managerial society to an entrepreneurial society, from left-brain thinking to right-brain thinking, from resource exploitation to resource conservation and from the family as the basic living unit to the individual as the basic unit.

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James Conant's post-Sputnik series of reports on American education included *The American High School Today* (1959), *Slums and Suburbs* (1961), *The Education of American Teachers* (1963) and *Shaping Educational Policy* (1964). All were published by McGraw-Hill, New York.

Critiques of the educational scene since the mid-1960s abound. Two of the more dependable sources are Fred M. and Grace Hechinger's *Growing Up In America,* which provides a fine historical background, and Gene I. Maeroff's *Don't Blame the Kids: The Trouble With America's Public Schools.* Both were published by McGraw-Hill, the Hechingers' book in 1975 and Maeroff's in 1982.

For a review of the politics of education during the 1970s, see an essay by David Tyack and Elisabeth Hansot, "Conflict and Consensus in American Public Education," *Daedalus,* Summer 1981. Excerpts appeared in *Education Week,* November 9, 1981.

Changes in the kinds of students being served by the schools are described in *Champions of Children,* the report of an Advisory Commission on Advocacy for Children and Youth that was published by the American Association of School Administrators, Arlington, Va., 1979.

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CHAPTER THREE

Why Not The Best?

At moments of grave social discontent, the politics of public education tend to resort to the same excesses in rhetoric and dialectic as do the politics of the nation. Failure to attain the ideal then is increasingly mistaken for failure of the ideal itself.

— Fred M. and Grace Hechinger
Growing Up In America

To the extent that school officials inform themselves about the new research and take it to heart, the decade ahead could be a period of renewal for American education.

— Diane Ravitch
Schools Make a Difference

We are beginning to learn what works, what makes for effective schooling. Findings from educational research studies over the past 10 years or so indicate with often remarkable consistency that certain school policies can pay off in improved learning for all children. According to educational historian Diane Ravitch, "The most important fact about these findings, from a variety of researchers, is that they establish that schools *do* make a difference and that school policies can lead to higher educational achievement, regardless of family background."

Educational research is emerging from its infancy. In 1968, it was estimated that there were 15,000 persons engaged full-time in finding ways to improve agricultural productivity. Another 60,000 persons were investigating the health sciences. But less than 2,000 persons were involved in education research.

Since then, thanks to substantial increases in public and private support, more intensive and sophisticated research — most of it school and classroom rather than laboratory or statistics centered — has been undertaken, with some notable results.

As this unprecedented surge in education research got underway, preliminary and early returns were not promising to those who believed in the efficacy of public schooling. Indeed, for many years it seemed possible to cite research findings to "prove" either side of any school-related debate. In some cases, this continues to be true. But even more unsettling to those who believed education could bring about economic and social equality were findings from two well-publicized studies. Both sociologist James Coleman's 1966 survey of equal educational opportunity and a 1972 followup report on inequality by Christopher Jencks suggested that family background contributed more to a person's ultimate success or failure than the impact of schools. In other words, if you came to school poor or otherwise

disadvantaged there appeared to be built-in limits on how much could be accomplished.

At about the same time, Charles Silberman's popular book, *Crisis in the Classroom*, concluded that neither pedagogical practitioners nor educational researchers knew how to improve school productivity, particularly for children who suffered social or economic disadvantages.

In the public mind, education had gone from being the panacea for all social ills — the euphoria of the Great Society era — to an ineffective anachronism that stimulated calls for deschooling society.

Public dissatisfaction with apparent school failures, combined with the desire of a few professionals to find something that worked, led to a resurgence in the wave of innovation that had begun to sweep American education following Sputnik. First to improve quality, then to provide equality, experimental and alternative schooling schemes were established, new curricula and technology introduced, open classrooms and team teaching attempted. Inevitably, gimmicks and fads appeared.

But now the findings of educational researchers are beginning to converge on a few relatively simple and inexpensive indicators of school effectiveness. If adopted by school systems across the country, they could provide all children with equal opportunities to gain quality schooling, regardless of their socioeconomic backgrounds. Some of these indicators apply to the school as a whole, others are classroom-related.

School-based Indicators

The major shortcoming of most post-Sputnik and post-Coleman efforts to improve the effectiveness and productivity of American schools appears to be a failure to focus on what researchers now regard as the single most important organic unit for educational change: the individual school. Bad enough that curricula, organizational and instructional reforms were developed independently of one another, so they not only lacked synthesis but were sometimes counterproductive. They also shared a common flaw: They were almost always imposed on schools by outside forces — the district superintendent, local school board or state or federal officials.

Schools subjected to such reform efforts would go through the expected motions, mouth the proper jargon and go on doing business pretty much as before. Eventually the reform effort would prove to have failed, funds would be withdrawn and the school could drop its pretenses. Most educational reform efforts have been ephemeral.

But some schools have succeeded in providing quality education. Three researchers who have sought out and found such schools in settings as disparate as California, the American northeast and inner-city London are John Goodlad of UCLA, Ronald Edmonds of Harvard and Michael Rutter of the University of London. They have found that each school, good or bad, is a distinct social system with its own culture, "ethos" and climate, which is chiefly responsible for its success or failure.

Not surprisingly, the single most essential ingredient of an effective school is an effective principal. "We did sometimes find highly effective principals presiding over ineffective schools, but we never found an effective school that was not presided over by an effective principal," Edmonds observes.

A 1980 analysis of seven research studies on the role of school principals undertaken by the Northwest Regional Educational Laboratory in Portland indicates that the difference between high- and low-achieving schools with similar demographic characteristics is the leadership provided by the principal, particularly in instructional planning and decision making. The research indicated that the positive effect of a principal's instructional leadership is both direct, as when he or she observes and participates in classroom activities, and indirect, as when teachers and principals work together to develop clearly defined instructional goals and strategies.

In his four-year study of a dozen London secondary schools, Rutter found

Are Small Classes Beneficial?

One of the most investigated aspects of education has produced no clear-cut research findings. The relationship between class size and student achievement remains controversial and uncertain.

Teachers, students and parents generally believe that smaller classes result in higher achievement and better student and teacher morale than do larger classes. They contend that improved achievement and fewer discipline problems justify the admittedly higher costs of smaller classes.

Many school administrators, school board members and taxpayers counter these arguments by claiming that since there is no firm research evidence that smaller classes automatically promote improved learning, the additional cost cannot be justified.

As a result, the resolution of local school district budget battles or teacher contract disputes often hinges on discussions about class size or pupil-teacher ratios. Increasing or reducing the number of students in classrooms throughout a school system can mean a difference of hundreds of thousands or even millions of dollars in a local school district's annual budget.

Research on the educational effects of class size dating back to the late 1300s has produced only a little practical guidance for school policymakers. What evidence that does exist tends to support only three general conclusions:

- Within a range of 25-34 pupils, class size seems to have little, if any, impact on the academic achievement of most students.
- Classes smaller than 25 are beneficial for pupils in kindergarten through grade three, students of lower than average academic ability at all grade levels and pupils from low-income families.
- Few benefits of smaller classes are possible unless teachers adapt their methods and styles to such a situation.

A detailed survey of research on class size, conducted by the Educational Research Service in 1978, concluded that decades of studies on the issue "fail to justify small overall reductions in class size or pupil-teacher ratio by a school board as a matter of general policy."

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that effective schools have an aura of success; staff and students shared high expectations of one another, both in personal behavior and academic performance.

Edmonds cites five characteristics of an effective school:

- Strong administrative leadership.
- A school climate that is safe, orderly and focused on learning.
- Clearly understood teaching objectives that are shared by the entire school staff." A school must care about some instructional objectives more than others," he notes. "If you leave teachers free to decide for themselves what to emphasize and what not, you lose a sense of cohesion. . . ."
- High expectations for *all* students.
- Frequent assessment of progress. "The significance of achievement data as the fundamental basis for program evaluation is not so much that it tells you what to do as it tells you what you must not do," Edmonds says. "The most effective schools tended to spend as much time aborting things that didn't work as they spent their time trying to gravitate toward things that did."

Classroom-based Indicators

In one of the most comprehensive studies of schooling ever undertaken, an eight-year effort that involved more than

Time on Task: Related

Schooling is related to time. Students usually are scheduled to attend school for five-six hours per day, five days per week, 180 days a year. Classes may average 45 or 50 minutes each. By the time students graduate from high school, they have spent 12,000 or more hours in a variety of classrooms, laboratories and lecture halls. They have been exposed to as many as 30 or more different teachers.

Researchers have found a positive correlation between how much of that time is devoted to learning tasks and how well pupils achieve. Generally, the more time on task, the higher the achievement.

But in most schools learning time robbers abound. There are lunch and recess breaks in the daily schedule. Announcements interrupt classes and disruptions occur when people walk into a classroom to talk to the teacher or a student. Inclement weather may cause the school day to be truncated or postponed altogether. Student and teacher absenteeism takes an additional toll.

Even within the classroom and without such outside disruptions much time is spent waiting for the teacher to give instructions or grade papers or work with an individual or small group of students — what researchers call "process behavior" time.

If two or more hours are lost each day to off-task activities and behaviors, students receive less than 100 days worth of instruction out of the scheduled 180 each year.

A federally funded study of the conditions and skills a teacher needs to teach effectively identified three kinds of time involved in learning:

- Allocated time — the amount of time the state, school system, principal and teacher sets aside for time in school and classroom.
- Engaged time — the amount of time available for the student to spend actively learning.
- Academic learning time — engaged time at the appropriate level of difficulty so the student can learn successfully. If the task is too easy, engaged time is wasted; if it is too difficult, engaged time becomes an exercise in frustration.

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1,000 classrooms in seven states, John Goodlad and his associates identified a single factor that could lead to "enormous improvements" in schools: the amount of time actually spend on instruction, what educators refer to as "time-on-task."

Goodlad's research teams found that the elementary school classrooms they observed averaged 22½ instructional hours weekly. That's time actually devoted to learning, not including time spent on such "housekeeping" chores as taking attendance, collecting lunch money, reading announcements or helping children with their winter garments. But time-on-task differences among classrooms ranged from 18½-27½ hours weekly, Goodlad found — a 50 percent difference.

"Here's where inequities begin," Goodlad told a gathering of chief state school officers in 1981. Not surprisingly, he noted, pupil achievement was higher in classrooms that spent more time-on-task. Subjects most frequently shortchanged in classrooms that evidenced less instructional time: social studies, science, the arts and health and physical education.

Goodlad said he and his associates also found "extraordinary differences" in the amount of time spent teaching various high school subjects. "The curriculum you get is a happenstance of what school you attend," he said, and suggested that the major inequity in American education today is no longer access to schools but access to knowledge.

to Pupil Achievement

Two Northwestern University researchers have identified a number of teacher activities that can influence academic learning time, including preparation and planning before the school year begins, instructional strategies, student motivation techniques and communication skills.

Benjamin Bloom of the University of Chicago has formulated a sequence of testing, teaching, retesting and reteaching known as mastery learning. Inherent in his approach to learning are four kinds of timing:

- Timing of initial instruction.
- Timing of correctives.
- Timing of guided practice.
- Timing of student progress to the next task.

In 1963, John B. Carroll, now at the University of North Carolina, developed a formula for the relationship between time and achievement upon which most subsequent studies have been based. Carroll said the degree of student learning equals time on task divided by the amount of time needed to learn. Stated in mathematical terms, the Carroll formula looks like this:

$$\text{Learning} = \frac{\text{Time on task}}{\text{Time needed to learn}}$$

Once they become cognizant of the correlation between time on task and pupil achievement, education policymakers and practitioners begin looking for ways to increase student learning time. The school year and day can be lengthened, for example, off-task activities decreased to squeeze more learning into each school day and instructional methods made more effective. The way to begin: Find out how time is used — and wasted — and then find ways to increase academic learning time.

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In reviewing 35 research studies of time factors in learning, the Northwest Regional Educational Laboratory (NWREL) reported in 1981 that it found "overwhelming support" for the hypothesis that "there is a positive relationship between the amount of engaged time given to a subject and achievement in that subject." Students who spent the greatest amount of time-on-task were higher achievers.

Also, the NWREL analysis found, "Students who had high engagement rates in listening, discussing, question answering and other kinds of interactive classroom activities achieved more than those who had high engagement rates in only non-interactive activities such as seatwork." In other words, the more a teacher teaches, the greater the pupil achievement.

Three other classroom-related indicators on effective schools, according to Rutter, are:

- Teachers have high expectations of their students; homework is regularly assigned and reviewed. Students know teachers expect them to behave responsibly and succeed in their academic work.

- "With respect to the overall organization of class teaching, we found that children's classroom behavior was much better when the teacher had prepared the lesson in advance, so that little time was wasted . . ." Rutter also found that successful class management was marked by productive use of instructional time and smooth transitions from one activity to another.

- Teachers of high achieving students use a lot of praise and deal firmly with disciplinary problems. Also, they are well aware of being a role model for their students.

Edmonds found that "teachers in schools that did not meet our standards of effectiveness tended most often to call on children who were most likely to have the answer to the question, whereas teachers in the most effective schools tended to be far more random in their selection of that portion of the pupil population that participated in class life, most especially including those children whose academic behavior was most marginal or tending to be most marginal."

Goodlad said that when asked, teachers say praising and encouraging students helped to increase their learning. "But in practice we found precious little praise in classrooms," Goodlad remarked. "We found more in the primary than in the upper grades. We observed twice as many instances of teachers' praising, encouraging and of correcting with guidance, of positive student-teacher interactions, at the early elementary level as at the senior high school level."

In reviewing the impact of teacher behavior on student achievement, N. L. Gage of Stanford found learning enhanced by teachers who are flexible in responding to students, enthusiastic about the lesson, business-like and task-oriented; who try to get answers to questions from students rather than answer all questions themselves; who avoid excessive criticism.

Clearly, past investments in educational research are beginning to pay off, even as current educational investments, both human and financial, decline. The challenge to education policymakers appears to be finding ways to use the returns from the one to more than offset losses in the others. But to do so, they must be aware of recent research findings and of some strategies for implementing them.

From Knowing to Doing

In March 1982, nearly 6,500 people attended the annual meeting of the American Educational Research Association (AERA) in New York City. The major issue? How to translate what researchers have learned about learning into school and classroom practice.

"We have miles to go to establish dialogue with practitioners," said William

Cooley, president of the 16,000-member organization.

"The gap between research and practice between what we know and what we do is one of the most crucial underdiscussed problems that face schools," added Milton Goldberg, executive director of the National Commission on Excellence in Education.

Several reasons for the lack of communication between researchers and practitioners were cited at the meeting, including: the way in which research papers are written, failure of education schools to transmit research findings to their students, failure of state education departments to disseminate research findings to local school districts and widespread skepticism among teachers about the relevance of research to classroom practice.

"We need to put together research in a way that is interpretable to those in the schools," Cooley said.

The AERA membership endorsed several actions designed to help put research into practice, including hiring an editor to "translate" the complexities and jargon of research findings into more easily understandable English and working more closely with other education groups such as teacher unions and the National School Boards Association.

While AERA efforts may indeed result in greater awareness of research findings,

A Promising Approach

One of the more promising approaches to school improvement efforts that is beginning to gain attention is the formation of local school advisory councils. Composed of parents, staff, students and citizens from the immediate school community, such councils focus attention on the needs of what researchers agree is the single most important element in educational reform — the local school site.

In California, for example, a statewide School Improvement Program requires a local site council at each participating school. In Denver, a network of school improvement and accountability councils has been established to broaden participation in policy development. Meeting at least once a month at each school, these councils are designed to provide the city's school board with a broadly representative means of identifying issues, opportunities and priorities.

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at least within the education community, the gap between what we know and what we do will continue to grow unless education policymakers are both aware of effective implementation strategies and act to make use of them.

Fortunately, in addition to knowing a good deal more about what makes for effective schools, we also are beginning to learn how to bring about effective change in schools.

It was an expensive if well-intended lesson. According to a 1978 Rand Corp. study, between 1965 and 1977 the federal government poured $80 billion into the nation's schools with little significant improvement to show for the investment.

The California-based study group blamed the government's failure on its "mistaken assumption that social problems, like some technological ones, can be solved by massive infusions of money and technical expertise."

Government planners believed incorrectly that the same research and development approach that launched the nation's space program could be used to revitalize American education, the Rand investigators said.

"But the centralized approach that put the federal government in the role of developing new technologies, providing incentives for their adoption and introducing these technologies into school districts simply did not mesh with the realities faced by the people on the firing line — the superintendents, the principals and teachers — who had to make the programs work," the Rand study found.

"In order to succeed, new practices must have the broadly based support of teachers, principals and district and state officials," the report said. "Change cannot be imposed from the outside."

What many school administrators and researchers believe may be a model for an alternative approach is a consortium of 30 small local school districts in Mississippi known as the Program for Research and Evaluation for Public Schools (PREPS). It's been successful in getting local district policies changed because it's locally funded and administered, according to Thomas H. Saterfiel, the educational researcher and former school administrator who directs PREPS.

In effect, PREPS researchers act as adjunct staff for the member school districts. "We go out and say, 'I am the assistant superintendent for research. You are the boss. You tell us what to do, and we'll do it.'" Saterfiel says.

Implementing change for effective schools appears to come down to some simple Goodlad findings:

- The optimal unit for educational change is the individual school.
- Principals can do more than any others to encourage and support the kind of school-by-school reconstruction that's needed.
- Each educational *system* (local school district) consists of educational *institutions* (schools). All the rest is superstructure that should exist for only one purpose: to support and serve each individual school.

Research findings on what makes for effective schools indicate that policies adopted by local school boards and administrators can have significant effect on pupil achievement. It may well be that the extent to which education policymakers become aware of these findings and act upon them will determine the future of public schooling in America.

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Part Two

Changing Focus and Dimension

CHAPTER FOUR

Conventional Wisdom Challenged

The world we're in the process of creating for ourselves and future generations is the product of our brains; therefore, only by understanding how our brains work, can we hope to achieve true insights regarding individual and species motivations.

— Richard M. Restak
The Brain: The Last Frontier

Proof that behavioral and intellectual differences between the sexes are partly rooted in the structure of the brain, that women are inherently superior in some areas of endeavor and men in others, would in no way undermine legitimate demands for social equality.

— Pamela Weintraub
The Brain: His and Hers

Our conventional wisdom about the human brain and the way people learn based in large part on four beliefs that are now being challenged by recent scientific studies and child development research findings. The *first* of these is that the human brain emerges at birth with all its genetic or hereditary components in place and intact, ready to be molded by the environment. Newborn babies have long been regarded as passive beings waiting for outside forces to shape their development.

A *second* belief is that most children, both boys and girls, are nearly enough alike that it is possible to impart knowledge to them in homogeneous groups or classes and that learning will take place pretty much simultaneously.

Third is the belief that male-female behavior differences are learned and not inherited, that if boys and girls were raised and taught in exactly the same ways, traditional behavior differences such as male aggression and female passivity would gradually disappear.

Finally, a *fourth* belief: that most learning takes places sequentially, that is, in a regular, uninterrupted, systematic and linear manner — the stimulus-response theory of the behaviorist tradition in child psychology.

From these four beliefs, the interrelationship of which represents in many ways a philosophical foundation for modern mass education, have evolved many of the accruements of contemporary public schooling: the development of what professional educators came to regard as "one best system" based on an industrial model of organization, the notion that learning is a product which can be packaged into a prescribed curriculum, the belief that children progress in lockstep fashion and in teaching them the emphasis should be on content rather than process.

There was no conspiracy involved in the evolution of these beliefs. They became

commonly accepted professional folklore because over many years they represented a combination of teacher perceptions of child behavior, an economical approach to mass schooling and a response to certain social pressures.

In recent years, however, there have emerged a growing number of research-based indicators that heredity influences brain development both before and for many years after birth, that basic differences among individual children are more pronounced than previously believed, that boys and girls inherently learn in different ways and that sequential learning addresses but half of a child's brain development potential. If these indicators prove valid, mass education as we know it may be ripe for a major revamping if not complete metamorphosis.

Brain Research Findings

Until recently it was widely assumed that environment was the crucial element in determining human behavior. Human reactions, unlike those of other animals, were believed to be conditioned more by socialization than instinct; learning was considered more important than heredity.

This notion that nurture transcends nature has suffered serious setbacks in recent years as a result of increasingly intense and sophisticated research into how the human brain functions. There is now evidence of a genetic component in certain kinds of human behavior, proof that brain cells don't work in a simple reflex arc, as previously believed, but are part of a far more complex continuous feedback loop and indications that the brain doesn't function in a straight-line, linear fashion after all, but is more multi-directional.

The significance of these findings is that the human brain may be unbelievably pliable and capable of consuming far more knowledge than ever before thought possible. It may be able to do so, it appears, if those responsible for human development — parents and teachers particularly — become more aware of both the heredity and environmental forces involved in how children learn.

Although brain research is still in its infancy, scientists now generally agree that the human brain, like the human body, undergoes perceptible developmental stages and that *both* genetic and social elements play a role in determining human growth, mental as well as physical.

For example, it has long been recognized that nutrition, an environmental factor, is a major determinant of physical growth. Now it seems that proper nutrition is essential for normal brain development as well. Beginning with the work of a Scottish pediatrician, Cecil M. Drillien, in the 1960s, and including more recent research by others such as Ernesto Pollitt of the Massachusetts Institute of Technology, Janina Galler of the Boston University Medical Center and David Levitsky of Cornell University, it is apparent that malnutrition adversely affects human brain development. And cognitive losses due to infant malnutrition apparently cannot be reversed or made up through adequate diet later in life.

As for heredity, researchers at New York's Mount Sinai School of Medicine have found that rudimentary fetal "thought" may start as early as the gestational age of five or six months. They discovered that in most cases among pregnant women, the fetal heartbeat begins to rise a few seconds before the fetus moves, much as in adults when the heart rate increases during the contemplation of action.

And researchers at Children's Hospital Medical Center in Boston, the University of Colorado Medical Center and Boston University Medical Center have discovered that newborn infants have inherent brain capacities that need only appropriate stimuli for proper growth. The most effective way to stimulate an infant's brain development, they found, is early and frequent parental attention, the reverse of standard practice in many hospitals.

Stages of Development

In addition to identifying the importance of both heredity and environment in human brain development, scientists also

have found that the brain grows by stages, although there is some disagreement as to how many and at what ages these generally occur.

What is significant, however, is that recent psychobiological research findings tend to correlate with the cognitive development theories of the Swiss psychologist Jean Piaget.

Beginning back in the 1920s, long before intensive brain development research began, Piaget identified four stages of intellectual growth that he believed occur for most persons from birth to about age 16.

During the first two of these, a "sensory motor" period extending from birth to about age two and a "preoperational" period lasting from ages two-seven, a child progresses from basic reflex actions to coordinating simple acts to an understanding and manipulation of certain symbols and signs.

By the age of seven or eight a child enters what Piaget called a "concrete operations" stage where consciousness of self interacting with the outside world first appears. This is followed by a "formal operations" period in the pre-teens and early adolescence years that encompasses a capacity to reason hypothetically.

Although Piaget was convinced that children moved through these stages in a smooth, gradual and evolutionary manner, more recent findings, particularly those of Herman T. Epstein of Brandeis University, suggest that youngsters experience alternating spurts of brain development followed by plateaus during which brain growth levels off.

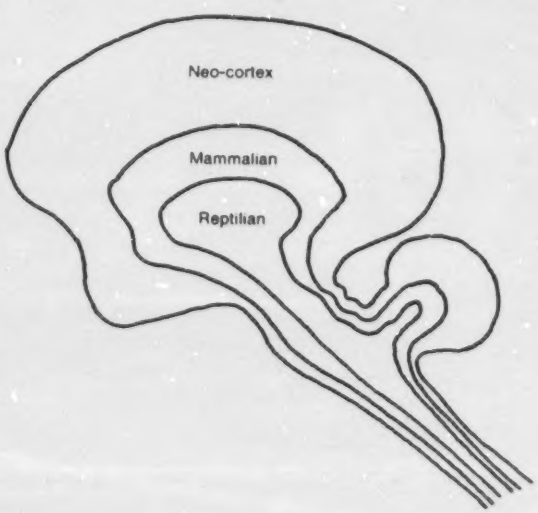
The reason for this may lie in the discovery by two University of Colorado Health Sciences Center researchers that some genes in the brains of mice aren't active at birth but "turn on" later in life. The Colorado researchers, William Hahn and Nirupa Chaudhari, speculate that some brain genes are activated by environmental stimuli while others may be turned on by a "genetic clock."

Triune Brain Model

The human brain is composed of three evolutionary layers, each of which governs different feelings and behaviors, according to Paul MacLean, chief of the Laboratory of Brain Evolution and Behavior at the National Institute of Mental Health.

The parts of MacLean's triune brain are: First, a core or *reptilian* brain, so-called because it is similar to the brain of alligators, turtles and lizards. This layer of our brain governs basic instincts such as survival and living space.

Second, according to MacLean, is a *mammalian* brain or limbic system, which is similar to the brain of lower mammals — rabbits, horses, etc. It is our emotional brain, governing affection, pleasure and pain.



Finally, and unique to human beings, is the *neo-cortex*, which is intellectual and conceptual. It helps humans cope and adapt, to develop a higher consciousness.

MacLean believes our major personal problems today — the breakup of the family, aggression and hostility — are due to the fact that our three brains have not yet learned to coordinate. As a result, we are split between our drives for survival, emotion and reason.

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At birth, the human brain weighs about one pound. Another pound is added during the first year or two after birth. And a third and final pound develops between the ages of two and 16 — 16 ounces of growth spread out over about 14 years.

Epstein, examining research on brain weight, found that brain growth between the ages of two and 16 occurs in four cyles of about three and one-half years each, a pattern that roughly parallels Piaget's four stages of intellectual development. But Epstein found that short periods of rapid brain growth are followed by longer periods of integrating that growth into the existing cognitive system. In most children, he discovered, four six-month periods of rapid brain growth — two or three ounces at a time — are followed by about three years of slower growth — perhaps another ounce — as the brain absorbs its new capacity gradually. These six-month rapid-growth spurts occur in most normal children sometime between the ages of two and four, six and eight, 10 and 12 and 14-16, according to Epstein.

Split-Brain Studies

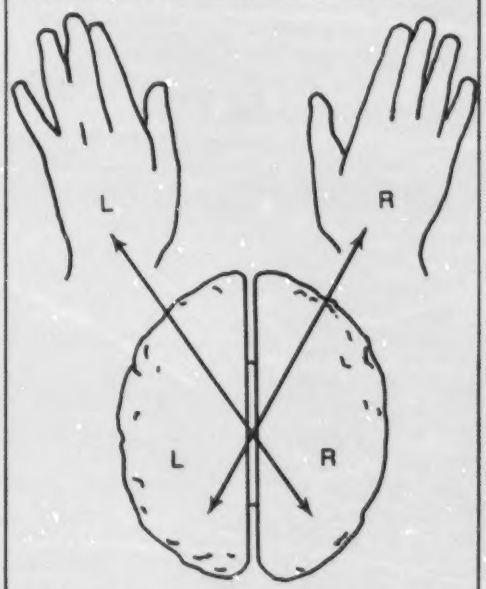
The human brain consists of two visually identical half shells, known as hemispheres, which are connected at the center by millions of tiny nerve fibers. The right hemisphere controls the left side of the body while the left hemisphere governs right side movements. In performing simple activities such as picking up an object the two hemispheres act in unison. The messages necessary to translate sight of the object into movement resulting in reaching out to grasp it and responding to its feel are instinctively and instantaneously transferred from one hemisphere to the other through the connective nerve fibers.

For more than 100 years scientists have known that the left hemisphere controls the language and language-related capabilities of most people. Because speech and language are essential to thinking and reasoning, it was assumed until recently that the left hemisphere was the dominant of the two halves of the brain. The right hemisphere was regarded as less advanced, a subordinate to the left.

Since the 1960s, however, research by Roger Sperry and Joseph Bogen of the California Institute of Technology, Marcel Kinsbourne of the Hospital for Sick Children in Toronto, Canada, and others indicates that the right hemisphere is more important than previously believed. Each hemisphere appears to specialize in different modes of thinking and while the two halves of the brain are complementary they sometimes respond separately and not always in synchronization to the outside world.

What researchers have discovered is that while the left hemisphere is indeed the verbal brain, controlling language and computation skills such as reading, speaking, writing and calculations, the right

How the Two Hemispheres Control Our Actions



Right brain controls left side movements, left brain governs right side of body. (Adapted from *Drawing on the Right Side of the Brain.*)

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hemisphere is our brain of imagination and intuition, the center of spatial abilities — recognizing a face, reading a map, listening to music, planning a garden or solving a geometry problem.

Instead of processing information sequentially, step-by-step, as the left hemisphere does, the right integrates diffuse information. While the left controls the mechanics of speech, the right gives it emotional inflection. The left hemisphere deals with the past while the right responds to the unknown. The left is conservative and traditional, the right more radical and innovative.

In the reality of daily living, of course, cooperation rather than competition between the two hemispheres prevails in most people most of the time. The two hemispheres, responding to different ways of processing information, operate as a team to allow us to function in equilibrium — although many of us depend more on one hemisphere or the other some of the time while others almost always achieve a more continuous holistic balance.

Left-Brain and Right-Brain Characteristics

Left (Women)	Right (Men)
Verbal	Spatial
Rational	Intuitive
Reason	Emotion
Successive	Simultaneous
Sequential	Integration
Analytic	Synthesis
Objective	Subjective
Convergent	Divergent
Reality	Imagination
Traditional	Innovative
Directed	Free
Past	Unknown
People	Objects

Sex Differences

Sexual equality does not mean genetic sameness. Science is now confirming that

Ski Right

The latest approach to learning how to ski uses right-brain oriented intuitive thinking.

Instead of emphasizing sequential left-brain techniques — bend your knees, lean forward, try to gain just the right angle to the slope, etc. — the new American Teaching Method encourages students to achieve a creative right-hemisphere "feel" for skiing. Students are urged to form a mental picture of themselves successfully negotiating a hill before they go out to practice.

Developed by Horst Abraham, technical director of the Vail, Colorado, Ski School, and a handful of other instructors, the American Teaching Method has been endorsed by the Professional Ski Instructors of America and is taught at a number of reputable ski schools throughout the country.

Photo courtesy of Outward Bound

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there are basic differences in the brains of men and women. Although denounced as sexist by some people, recent research, much of it by females, indicates that boys and girls are born with innate differences in the ways their brains develop and function. As a result, women generally are superior in certain ways of thinking and behaving while men excel in others.

Jerre Levy, a neuropsychologist at the University of Chicago, found that the left ear and eye are more sensitive in men, the right in women. Since what is seen or heard by the organs on one side of the head is controlled by the brain hemisphere on the opposite side, she concluded that men are right-brain oriented while women tend to be more influenced by their left brains.

Math and Music Dichotomy

If computation is a left-brain skill and music appreciation a right-brain specialty, why do boys, who are supposed to be right-brain oriented, excel in math while girls, who tend to favor left-brain learning, are far more likely to be able to carry a tune?

Boys, it appears, perceive numbers as dimensional rather than verbal. As a result, they use their natural, right-brain spatial and intuitive skills to put numbers together to form a whole — to solve a problem. This right-brain directed ability is especially pronounced in geometry, a subject educators have long observed tends to be understood and mastered far more easily by boys than girls.

As for music, it seems that the ability to compose is primarily a right-brain specialty, requiring a great deal of imagination and emotion. Hence the overwhelming preponderance of male composers. But the ability to carry a tune requires both pitch and timbre — right-brain tendencies — and rhythm — a left-brain function. Since women excel in integrating the functions of the two hemispheres, they appear to have a greater natural ability to sing on key and carry a tune.

According to Diane McGinness, a research psychologist at Stanford, "women are communicators and men are takers of action . . . Males are better at maps, mazes and math . . . They're better at perceiving and manipulating objects in space. They have a better sense of direction.

"Females, on the other hand, excel in areas males are weak in, especially in areas where language is involved: fluency, verbal reasoning, written prose and reading . . . Females' verbal memory is also better. And they can sing in tune six times more often than males can."

Men tend to use their two brain hemispheres for specialized purposes — the

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right for spatial problems, the left for verbal. Women don't specialize as much. Their right and left hemispheres usually work together on problems, both spatial and verbal. As a result, women synthesize material better and are more perceptive about people, how they feel and what they mean. Which explains "women's intuition," although intuitive thought is a right-brain function.

Richard M. Restak, a neurologist at Georgetown University School of Medicine, sums it up: "Men are object people," he says, "while women are people people."

While these recent research findings seem to hold true for most people most of the time, there are, of course, exceptions — men who are unusually good writers, for example, or outstanding female mathematicians. In addition, in nearly half of all left-handers the role of the two hemispheres seems to be reversed, the right being the verbal, the left spatial.

Another sexual difference that could have enormous ramifications for learning and education is Epstein's discovery that girls generally undergo rapid brain growth earlier than boys — until the 14-16 year-old period when the situation reverses.

This means that most girls are intellectually more prepared for certain kinds of learning before most boys at key age levels — the early school years, for example, and particularly in the age 10-12 range — about sixth or seventh grade. As girls begin puberty, Epstein found, their brain growth is three times that of boys the same age.

And yet, most schools — and parents — make little or no allowances for these significant differences in learning capacities. The belief persists that most children, boys and girls alike, are pretty much the same at all age and grade levels. By continuing to impart knowledge in ways that researchers now tell us are at best ill-timed and inefficient, we may be shortchanging our children, those who as adults will have to deal with life in another century.

However, before changing the ways children are taught, by parents and teachers alike, to conform to what brain research indicates corresponds to reality, it may be helpful to look into what is now known about child and student learning styles.

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C H A P T E R F I V E

Learning and Teaching Styles

> Conventional forms of schooling, because of the very structure of a school, violate just about everything that is known about how human beings learn.
>
> — Neil Postman and Charles Weingartner
> *The School Book*

> Educators must begin to base programs on the individual differences that exist among learners rather than on the assumption that everybody learns the same way.
>
> — James W. Keefe
> *Student Learning Styles*

Even as scientists are achieving breakthroughs in discovering how the human brain develops and functions, education researchers have been making progress on a related front: the significance of differences in student learning and teacher instruction styles.

Obviously, this work goes to the heart of the belief that most children of any given age are enough alike that they can be taught a predetermined curriculum *en masse*.

Not surprisingly, in view of brain development findings, researchers have discovered that each student brings to a classroom characteristics of mind and personality that affect, to varying degrees, his or her ability to learn. Similarly, teachers have definite styles to which students respond differently.

Some children seem to learn better in groups; others appear to progress best alone. Some remember spoken words and forget most of what they read; others remember what they read but get little out of lectures. Some learn best in a quiet setting while others prefer a noisy environment. Some need a lot of light while others learn better in a darker room.

Teachers, too, bring different characteristics to a classroom. Some are able to bring diverse groups of students together while others function best with more homogeneous groups. Some teach with strict discipline, others with more freedom. Some have a conceptual approach to a subject, some are more mechanical. Some are verbally oriented while others prefer more visual approaches.

The right teacher or method may be right for some children and wrong for others. Even for the same children, different approaches may work at different times.

Of course, most teachers, school administrators and parents are well aware that students differ in how they learn. And students are cognizant of different approaches to teaching. But generally it has been assumed that if quality instruction is made available, learning will naturally follow — despite differences in student abilities and learning styles.

Ability Grouping

One of the most common and controversial ways schools have tried to adapt to

student learning differences is through ability grouping, that is, placing students for instruction with other students of similar ability levels. Usually this results in dividing any group of students into three ability levels — sometimes called "tracks" or "streams."

Students perceived to be of high ability are grouped together, and usually receive enriched academic fare and are allowed more opportunities for independent work. Students who are considered to be of lesser ability often are offered a more Spartan academic diet and receive increased individual attention in a more structured setting.

Such homogeneous grouping is considered advantageous because it accommodates individual differences by allowing students of similar ability to work together at their own rates with methods and materials geared to their level.

However, homogeneous grouping is controversial because it is considered by some to be undemocratic. It adversely effects the self-image of children placed in low-ability groups, they contend, while at the same time artificially inflating the egos of children placed in high-quality groups.

In addition, ability grouping has been termed discriminatory since it has been known to result in the placement of children from socially less advantaged groups in low-ability classes.

After reviewing more than 20 studies of ability grouping experiences in a variety of elementary and secondary schools throughout the nation, researchers at the Northwest Regional Educational Laboratory in Oregon concluded that homogeneous ability grouping has a positive effect on the achievement, school attitudes and self-concepts of high-ability students only.

It has a slightly negative effect on the achievement level of middle-ability students, they found, and a decidedly negative impact on the achievement, school attitudes and self-concepts of low-ability students.

Conversely, they discovered, heterogeneous grouping — that is, mixing students of varied ability in the same class — has a positive effect on all three of these outcomes for low-ability students. Apparently, the enriched environment of proximity to high-ability students has a positive effect on the attitudes and performance of low-ability students.

Ability, Style and Structure

While ability grouping clearly is designed to respond to student learning differences, particularly *how well* students achieve academically, it does not address differences in *how* students learn best. Education researchers have found a surprisingly low relationship between learning styles and ability levels. Many high-ability students, for example, need a structured program if they are to achieve at their level of potential. And yet, many programs for high-ability or gifted students feature independent study.

Many educators are coming to recognize that efforts to compensate for differences in student learning *abilities* should not be confused with those needed to respond to differences in learning *styles*.

David E. Hunt, a psychologist at the Ontario Institute for Studies in Education in Toronto, believes one of the most effective ways to consider different learning

styles is in terms of how much structure a student needs to learn most effectively.

On a three-stage scale, A-B-C, Hunt characterizes A students as those who require a great deal of structure — teacher explains material in detail, instruction given clearly with very specific requirements. C students, on the other hand, are those who require little structure, organize their own material and require a minimum of teacher involvement.

In testing students to determine their need for a structured or unstructured learning environment, Hunt and his colleagues found that more than half of all sixth graders require a high level of structure while the opposite was true of ninth graders — more than half of them learn better in a less structured classroom or school setting.

Anthony F. Gregorc, associate professor of curriculum and instruction at the University of Connecticut at Storrs, has identified four learning patterns:

- *Concrete sequential*, characterized by a propensity to derive information through direct, hands-on experience. Such learners appreciate order and logical sequence.
- *Concrete random*, characterized by an experimental attitude and an ability to make intuitive leaps in exploring unstructured problem-solving experiences. Such learners use a trial-and-error approach in acquiring information.
- *Abstract sequential* learners have a wealth of conceptual images in their minds against which they match what they read, hear or see. They prefer a presentation that has substance, is rational and sequential in nature.
- *Abstract random* learners are distinguished by their attention to human behavior and a capacity to sense and interpret "vibrations." They associate the medium with the message, prefer to receive information in an unstructured manner and therefore like group discussions and a busy environment.

To help educators match student learning styles to teacher instruction styles, a variety of measurement techniques has been developed. One of the most widely tested is the Learning Style Inventory (LSI) developed by Rita Dunn of St. John's University, Kenneth Dunn, superintendent of schools in Hewitt, N.Y., and Gary E. Price of the University of Kansas. LSI provides a student profile based on 24 factors, including a student's preference

for structured or unstructured learning, classroom design, motivation and others.

LSI developers claim that through their computerized measurement technique it is possible to predict which students will function well in a traditional, individualized, open or alternative instructional program. Also, they claim, it is possible to determine which resources — programs, games, films, tapes, etc. — will assist individual students to achieve.

Grouping students according to their learning styles instead of ability levels is a relatively recent development in education. It's an approach that is catching on slowly and for which there is as yet little evaluative data with which to assess its impact on teacher and learner. But preliminary indicators suggest that matching student learning styles to teacher instructional preferences may be a more effective and

egalitarian approach to mass education than ability grouping.

Significance and Implications

What do recent brain development and learning style findings mean to child development and formal schooling as we know them today and look ahead to the year 2000? Some speculations follow:

First, it appears increasingly obvious that more attention should be given to both environmental and hereditary factors in human development. Just because we've learned that genes are more significant than we previously believed doesn't mean that cultural considerations are now less important.

In fact, Donald Klein, director of research at the New York Psychiatric Institute, believes that "among the variables affecting intelligence is the richness and responsiveness of the early environment. Kids brought up in what might be called a 'stupid' environment — understimulating, poor, unresponsive — soon learn not to take chances. . . . On the other hand, kids raised in a smart, responsive environment, which is complex and stimulating, may develop a different set of skills. . . . It is not impossible that a smarter environment might make smarter people."

Another environmental change that might be given serious consideration is in the structure and orientation of our schools. School systems generally have a left-brained approach to learning. Students progress through grades in linear fashion. Most instruction is through listening and reading; most student feedback is through talking and writing — all left hemisphere functions.

As a result, both left- and right-brained children are shortchanged. Those who learn well through left-hemisphere input receive little practice in using their right hemisphere. And those who could learn best through right-hemisphere input are forced to rely primarily on their weaker left hemisphere without getting the same information through their more adept right hemisphere.

New Ways of Teaching

Innovative approaches to learning are becoming increasingly common, both in public schools and private instructional settings. A few examples in the Denver area include:

- **Determining a child's readiness to read by measuring his or her ability to draw, a project in a Jefferson County elementary school, is said to prevent the "learning disability" syndrome that often develops from attempting to teach reading before a child is intellectually able to grasp the concept of letters standing for sounds and groups of letters comprising a word.**
- **Seventh and eighth grade students in Denver's new middle schools are grouped into learning units of approximately 120 students under the guidance of interdisciplinary teams of four academic teachers, one for each major subject area, science, math, social studies and English. The teaching team meets regularly to assess student needs and modify instructional strategies.**
- **A "visualization" approach to learning, known as "neuro-linguistic programming" or NLP is used by Learning Resources Unlimited, a Denver consulting group, to improve the achievement levels of learning disabled children.**
- **"Superlearning," a technique developed in Bulgaria that combines music with the rhythmic chanting of material to be learned, is used by the Foreign Language Institute of Denver to teach French and Spanish.**

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Madeline Hunter, director of the University Elementary School at UCLA, believes the results of recent brain research "clearly mandate the responsibility for beaming instruction so that, whenever possible, information that is presented in a linear fashion across time (reading it or hearing it), is also presented in visual space (seeing or imaging it) so students have practice in integrating the information from their two hemispheres."

Dr. Hunter believes schools should deliberately incorporate practices to increase student facility in the use of each hemisphere, singly and in concert. She suggests three strategies:

- Presenting stimuli simultaneously to both hemispheres.
- Augmenting a stimulus to one hemisphere by following it with information beamed to the opposite hemisphere.
- Deliberately beaming a stimulus to only one hemisphere so students can practice increasing their ability in processing one type of information.

"We must deliberately incorporate those strategies which reflect research in hemisphericity into our daily teaching and augment with right-brained input the predominately left-brained educational programs currently in our schools, Dr. Hunter asserts.

Meanwhile, in view of what we now know about the male brain, it may be time for a change in attitudes and approaches to the problems of hyperactive or "learning disabled" children, the vast majority of whom are boys. As Richard Restak observes, since we know that the male brain prefers to manipulate things, why do we still expect boys to sit for long hours in a classroom? Since we know the male brain is visually oriented, why does the typical classroom require so much attentive listening?

"Classrooms in most of our nation's primary grades are geared to skills that come naturally to girls but develop very slowly in boys. The results shouldn't be surprising: a 'learning disabled' child who is also frequently 'hyperactive.'"

Since we know that boys have difficulty learning to read and girls have trouble learning math, we should determine whether to delay teaching these subjects until the childrens' brains are more developed or devise new instructional techniques that take boy-girl brain differences into account.

If, as Herman Epstein asserts, brain growth in 10-12-year-old girls is three times that of boys the same age, girls probably should be exposed to advanced problem solving in science and mathematics at the sixth, seventh and eighth grade levels. Instead, they usually have to wait until high school, which may be more timely for boys but too late for girls if they are to make the most effective use of their brain development patterns.

And since we now know how markedly student learning styles vary, teachers might consider ways to develop more effective instructional techniques. In observing more than 1,000 classrooms across the country, a research team headed by John Goodlad of UCLA found a "depressing sameness" in teaching techniques. After the first few years of schooling, the researchers found little or no variety in the way teachers teach, what educators call pedagogical style. From about fourth grade on, they found, most teaching in American schools is conducted in a lecture style, the teacher talking in a flat emotional tone, with little student involvement or feedback and an air of passivity permeating the classroom.

Our schools were created to meet the comparatively fixed knowledge needs of an industrial society at a time when we knew little about the human brain. Now, as we move into a seemingly limitless information era with new insights into how people learn, would seem to be a propitious time to reassess longstanding practices in anticipation of new technologies such as microcomputers and the growing need to prepare children for lifelong learning.

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C H A P T E R S I X

Hello, Mr. Chip

We move from the amplification and emancipation of the power of muscles to the amplification and emancipation of the power of the brain.

— Christopher Evans
The Micro Millennium

I remain skeptical and pessimistic about computer systems ever possessing the sensitivity and judgment required of a first-rate teacher.

— Joel S. Birnbaum
Microelectronics and Education

The most salient feature of our emerging post-industrial society may well be the microcomputer. More importantly, however, it is to our emerging information society what the steam engine was to the industrial revolution, the *sina qua non* of a new era.

When *Time* magazine editors met to select their "Man of the Year" for 1982, the winner was the microcomputer — a "Machine of the Year."

The computer, a World War II-stimulated product of advanced industrialization, seemed to have found its niche by the mid-1950s. The relatively few computers that then existed were huge, costly and highly specialized. They were useful to the military, big business and large research universities, but of not much consequence in the daily life of ordinary people.

Then the fecundity of Bell Telephone Labs produced tiny silicon chips in the form of "solid state" transistors that could replace electronic vacuum tubes and act as powerful amplifiers. A substantial reduction in first the size and later also the cost of computers became not only possible but, as demands increased, economically feasible as well. By the early 1980s, a chip no bigger than the tip of a finger could provide as much computing power as a roomful of 1950s equipment, and be produced for only a few dollars at high volume.

So much have both the size and cost of computers been reduced that it has been estimated that if the automobile industry had achieved comparable improvements over the 20 years between 1962 and 1982, a new Rolls Royce would today cost about 10 cents.

Today, of course, a new Rolls Royce costs considerably more than it did 20 years ago and there aren't that many more of them on the road. But computers, particularly microcomputers, seem to be everywhere. Not only large businesses, but brokerage firms, insurance and real estate offices, law partnerships, doctors, even farmers are using desk-top microcomputers to record transactions, store records, keep track of inventories, order spare parts and perform other tasks that once required clerks or bookkeepers.

Other examples of computer technology in our daily lives include those electronic

"wands" that some retail establishments use to ring up prices, supermarket checkout counters that have electronic eyes to "read" coded prices on merchandise and travel agents who use a keyboard and videoscreen to make reservations. The postal service now offers "electronic mail" and some public libraries have microcomputers that can be rented by the hour.

In the home, where silicon chips control the functions of microwave ovens, color television sets, stereo systems and digital clocks, personal microcomputers are increasingly being used to plan and keep tabs on the family budget, store recipes, play games and provide new educational opportunities for young and old alike.

Impact on Education

Schools, colleges and universities are using computers not only for budgeting, maintaining student records and scheduling classes, but also more and more as teaching aids. Electronically programmed instruction is being used to help drill students in basic reading and computation skills, in learning foreign languages, in conducting science experiments, even to simulate historical events such as traveling over the Oregon Trail.

As tutors or surrogate teachers, computers capture a student's attention in unusual and exciting ways, adding a new dimension to learning. They can be agreeably repetitious, for example, never losing patience during the tedium of basic skills drill. Or they can simulate an environment outside the classroom, providing students with opportunities to discover for themselves through experimentation.

In its 1982 spring survey of education, *The New York Times* cited estimates that at least half of all secondary schools in the nation and 14 percent of all elementary schools were using computers in some of their classrooms. At the same time, *The Chronicle of Higher Education* reported that "computers are becoming an essential part of the general college curriculum. And the federal government said that the number of personal computers used in school for instructional purposes tripled between the fall of 1980 and the spring of 1982.

Examples of how computers are being used in schools and colleges across the nation range from the routine to the esoteric. For instance:

- At a public junior high school in Ridgewood, N.J., a group of students voluntarily stay after the school day ends to work on special computer projects such as a simulation of the operation of a nuclear reactor or the development of a computer image of the human heart.
- At the private Lamplighter School for children aged three-nine in Dallas, Jean Piaget's theories on the stages of child development are being tested and applied through computer-assisted instruction.
- In Wausau, Wis., a 16-year-old high school junior has translated musical notes into digital form and has a computer playing Bach and Vivaldi through its loudspeaker.
- In Provo, Utah, a private school has been established to test the concept that computers can be used effectively in every facet of teaching.
- In Northern California, a new "high technology" high school opened in the fall of 1982, fully equipped with sophisticated computers donated by nearby electronics firms.
- In Denver, the local school board has ordered that all students learn introductory keyboard skills at the earliest possible age and has served notice that computer literacy will soon be required of all students and teachers.
- At the higher education level, students in freshman English classes at Cornell University write their essays on a computer while French and philosophy professors at Wells College have written their own computer programs to help students in their classes.

Why Now?

Why this seemingly sudden interest in computer technology? After all, computers have been available at most universities and many schools for years without sparking the interest that now seems to be sweeping the country. And previous flirtations with educational technology, notably teaching machines and classroom television, proved evanescent. Only pocket calculators caught on, and the impetus for using them came primarily from students, not teachers or administrators.

Those involved in the computer craze cite a number of reasons why microcomputers seem to be gaining increased favor in school and college classrooms. First, microcomputers — unlike their larger predecessors — are relatively inexpensive, self-contained, reliable and easily accessible. It isn't necesary to wait for open lines to share time on a larger centrally located computer, for example.

The Lisa Breakthrough

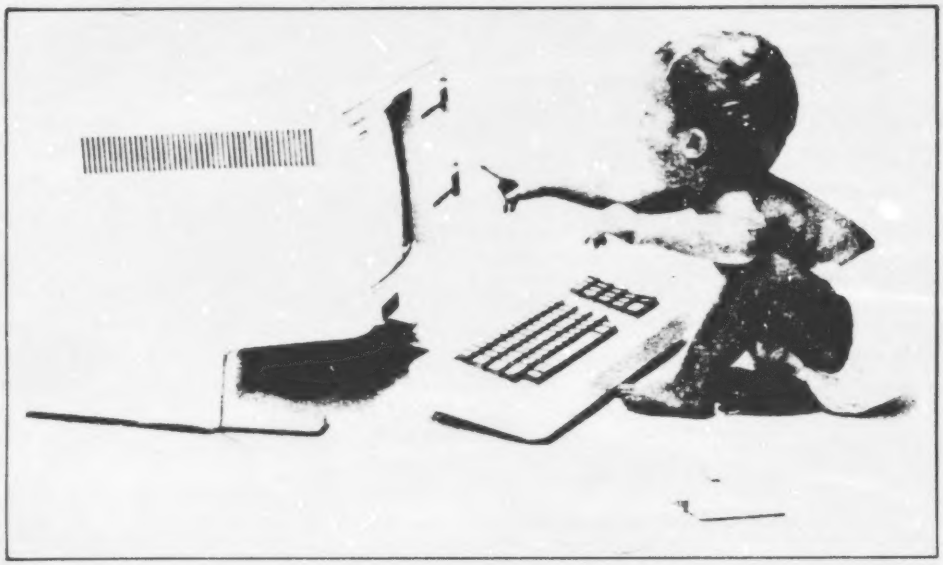
One of the major barriers to putting microcomputers into every home, classroom and business is that they still require a certain degree of sophisticated understanding and knowledge to be operated. They are not yet entirely "user friendly."

That began to change in January 1983 when the Apple computer firm introduced Lisa, an unusually simple to operate — although expensive ($10,000) — desktop microcomputer.

Later in the year, Apple is expected to announce Mackintosh, a more affordable ($2,000) version of Lisa.

Using a small device called a "mouse," Lisa allows an operator to communicate with the computer through simple graphics rather than the traditional text display and keyboard input devices employed by other microcomputers. In addition, Lisa has "integrated software." All programs work together and can share information easily and conveniently.

As such "user friendly" means of operating microcomputers become more common — and less expensive — the last barriers to widespread computer use will have fallen.



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Second, there's widespread growing awareness on the part of both teachers and students that computers are going to become increasingly smaller, less costly and more useful to ordinary people in the years ahead. As a result, there's a greater incentive to use computers in schools and colleges.

Third, almost every research study on the effectiveness of computer-assisted instruction indicates that it leads to higher student achievement than traditional instruction alone. Students seem to learn more with computer-assisted instruction.

Also, many teachers apparently like the new microcomputers. Contrary to popular belief, teachers not only aren't afraid of the computer age, they seem eager to join it and help bring their students along. According to a survey of elementary school teachers by *Instructor* magazine, reported in its May 1982 issue, 86 percent of more than 4,000 respondents had an above-average to high-level of interest in computers. The survey also found that 78 percent of the teachers responding can operate computers, 64 percent have some programming skills and 39 percent help other teachers use computers.

Future Possibilities

As for the future role of computers in education, the views of three specialists provide some insight:

Christopher Evans, an experimental psychologist and computer scientist who died unexpectedly in 1979, speculated in his book, *The Micro Millenium*, about the impact computers will have on medicine, law and education. The human role in all three will decline, he surmised, as open-ended conversational computer programs are developed that can diagnose ailments and prescribe cures, search for legal precedents and render advice or provide instruction in both basic and more advanced skills. There will continue to be a need for surgeons, trial lawyers and master teachers, Evans conceded, but he wasn't very sanguine about the future prospects for others in these three fields.

"Does it seem incredible that a tiny package no bigger than a calculator could

pick up the reins of the teaching profession?" Evans asked. . . . "The truth is that the world is about to move from the era where knowledge comes locked up in devices known as books, knowledge which can only be released once the keys to their use have been acquired. In the era it is about to enter, the books will come down from their shelves, unlock and release their contents, and cajole, even beseech, their owners to make use of them."

Far less pessimistic about the future role of teachers in an information society is Joel Birnbaum, director of Hewlett-Packard's computer research center in California. There are limits on how much students will ever be able to learn from computers alone, Birnbaum said in a speech on the future of microelectronics and education at the 1982 annual convention of the National Association of Secondary School Principals. He suggested that the most exciting new applications of computers to education could result from combining computing and communications technologies, connecting low-cost computers on a global scale through the telephone and television.

Birnbaum suggested that through such linkages students in foreign language courses could learn by way of teleconferences with classes in schools in other countries. He noted that in the future a student writing a research paper will be able to have access, through a conventional home television set linked to a microcomputer, to any reference work, book, magazine or newspaper, and it will be available page-by-page, topic-by-topic as needed.

He anticipates the development, over the next few years, of microcomputers the size of pocket calculators that know grammar, can spell, translate and solve algebra problems. He suggested that if every student had such a machine and knew how to use it, schools could "concentrate on creative applications of knowledge" and leave routine teaching chores to machines.

(Computers capable of augmenting many routine teaching chores as described by Evans and Birnbaum will employ what is known as "artificial intelligence," a subfield of computer science that is devoted to developing machines capable of symbolic reasoning and problem-solving.)

Seymour Papert, a mathematician who studied with Piaget, is associated with the

Artificial Intelligence Laboratory at the Massachusetts Institute of Technology. He helped develop the computerized curriculum of the Lamplighter School in Dallas. Papert believes that with the aid of properly programmed microcomputers children can begin to learn to read and write at the age of three. He also believes that if every student had his or her own personal microcomputer it would be possible for them to learn in 12 years what now takes 13 (kindergarten plus 12 grades). Saving the cost of one year of formal schooling, he points out, would more than make up for the cost of giving every child a computer.

But Papert doesn't believe computer instruction will ever replace the need for schools. "I think that obviously it will always be necessry to have places where children come together and interact socially with one another and come into contact with a wider variety of adults than they meet at home," Papert says. However, he adds, "the concept of school where a teacher has a job of imposing in an authoritarian way fixed curriculum on a fixed group of children, I think that's going to go away. I think we've adopted that kind of method only because of the primitive conditions of learning up to now."

Computer Literacy

The term that is widely used to describe a person's ability to understand, operate or program computers is "computer literacy." It is a term that in education circles is the subject of a continuing debate about what constitutes an appropriate standard for computer skills.

Some believe a student should be considered "computer literate" when he or she is capable of operating a computer as well as other machines such as a calculator or typewriter. Others contend that students should be able to demonstrate programming skills before being considered computer literate. Still others believe students should also understand how computers work.

Ernest Anastasio, vice president for research for the Educational Testing Service in Princeton, N.J., believes that "we've got to get below that opaque level of putting computers into the schools and teaching kids to run programs. We've got to teach them how the computer functions and what its potential applications are, so that they will have the knowledge to make intelligent choices in their later lives."

Stephen White, director of special projects for the Alfred P. Sloan Foundation, says that the idea that all students "should be acquainted with the computer in some reasonably respectable fashion is surely no more radical a thought than the proposition that they should be able to read and write."

A few colleges and universities and at least one local school district already have moved to require some form of computer literacy as a precondition for graduation. This is the case at the Rochester Institute of Technology, for example, and at Hamline University beginning with freshmen who entered in the fall of 1982. Clarkson College and Drexel University will require all students to have their own personal computer beginning with 1983 incoming freshmen. And in February 1983, the suburban Denver school district of Westminster added a year of computer training as a graduation requirement, beginning with students entering high school in the fall.

How important will computer literacy be in future years? A study of the nation's future technical training needs, published in early 1982 by the Denver-based Education Commission of the States (ECS), provides some indications. While the ECS study does not focus on computer literacy *per se*, it does spell out the kinds of skills high school graduates will need for self-sufficiency in a society where the computer chip is replacing oil as the driving force of the economy.

Noting that the nation's labor market is shifting steadily from unskilled and semi-skilled blue-collar jobs to technical and professional positions that require a higher order of knowledge, the study warns that "unemployment is likely to increase unless

the educational delivery systems can react fast enough to train workers in the critical skills."

The skills that will be needed, according to the ECS study, include — in addition to basic reading, writing and computation skills — the ability to evaluate and analyze, critical thinking and problem-solving skills, creativity, decision-making abilities and "communication skills through a variety of modes."

However, data from the National Assessment of Educational Progress "provide convincing evidence that by the time (today's) students reach the age of 17, many do not possess higher-order skills, including problem-solving, analysis, critical thinking and evaluation. . . . Not only is the percentage of students who possess higher-level skills minimal, it is also declining," says the ECS study.

What Are The Problems?

Assuming that increasing computer literacy among high school students would help close the gap between the kind of labor force the nation's going to be needing and the quality of high school graduates it's currently producing, what are some of the barriers standing between where we are and where we need to be heading?

To begin with, the so-called "microcomputer revolution" has occurred so rapidly — it began about 1977 — that the number of classroom computers is growing more rapidly than the number of experienced teachers trained to use them and the ability of education schools to prepare prospective teachers in their use. "The machines are appearing rapidly in schools, but they are getting used poorly or not used at all," observes Alfred Bork, director of the Educational Technology Center at the University of California, Irvine.

David Moursund, a professor of computer science at the University of Oregon, which has had a computer education program since 1970, estimates that as few as five percent of the more than 1,300 teacher-training programs in the nation

offer undergraduate courses in computer education.

A related problem at the higher education level is the growing competition with industry for faculty members who are qualified to teach the computer sciences. As Stanley Pogrow, associate professor of educational administration at the University of Arizona, has observed, now that the primary business of business is the

The Great Awakening of 1982

When historians in the year 2000 look back on the 20th century, they may well note that in 1982 a great awakening took place in American education.

That was the year in which awareness of a growing educational deficiency became widespread and a number of efforts began to counter it.

The deficiency was identified and publicized by the Denver-based Education Commission of the States (ECS). A federally funded ECS project, the National Assessment of Educational Progress, had disclosed alarming declines in the number of students capable of thinking critically and able to manipulate data. This at a time when the nation already was moving from an industrial to an information-oriented economy. It appeared that just as the need for people prepared to work in a high technology society was increasing, schools were turning out fewer rather than greater numbers of such people.

But one of the striking features of the American system, the historians will note, is its response capacity.

ECS took the lead, alerting the nation's governors to the problem and mobilizing them to begin dealing with it on a state-by-state basis. At the 1982 annual meeting of the National Governors' Association, ECS officials presented a plan for improving mathematical and scientific literacy throughout the nation — a proposal that initially was acted upon by only a few states but which within a few years had become a new nationwide educational policy.

On the national scene, growing awareness of the need to increase technology literacy levels was reflected in the introduction of legislation, reminiscent of the post-Sputnik National Defense Education Act of 1958, to provide local school districts with incentives to develop and implement new programs in mathematics, science and foreign languages. And in his early 1983 State-of-the-Union address, President Reagan emphasized the role of education in bolstering the nation's economic recovery and committed his administration to improving mathematics and science teaching in the schools.

Earlier, two leading national science organizations had issued reports and action plans to avert the growing deficiencies in mathematics and science education. The National Science Board, policy-making arm of the National Science Foundation, established a commission on pre-college education in mathematics, science and technology to help schools improve their teaching of those disciplines. And the American Association for the Advancement of Science published a report, "Education in the Sciences: a Developing Crisis," which outlined a variety of actions, including support for teachers through the production of special materials and efforts to gain recognition for good teachers.

And education organizations, often at odds on other issues, joined the movement. Both the Council of Chief State School Officers and the American Federation of Teachers, for example, announced plans in 1982 to establish new partnerships between the business and education communities to explore ways of alleviating shortages of science and mathematics teachers and improve curricula in those areas.

The result of the great awakening of 1982? We'll have to await the verdict of historians in the year 2000.

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generation and manipulation of information, both universities and industries are seeking the same kind of talent. Because industry usually pays more, even as the nation's colleges and universities face the need to provide more computer-related instruction, they are confronted with shortages of key personnel. The National Science Foundation recently estimated that 10 percent of existing electrical engineering positions at colleges and universities were vacant.

A third problem is equity. According to Sam Gibbon, director of a science and mathematics project at the Bank Street College of Education in Manhattan, unless all children in all schools are provided equal opportunities to gain computer literacy, "we run the risk of empowering some learners and disenfranchising others.

"We must find ways of enabling children in poorer school districts to have access to the electronic learning environment in addition to students in well-to-do areas," Gibbon asserts.

Unless we do, we could, as Christopher Evans wrote, "find ourselves with a generation of children sharply divided between those who have amplified their own brain power with that of the computer and those who remain wedded to the haphazard ignorance of the past."

Although microcomputers cost considerably less than their predecessors, and while prices are dropping steadily, it still requires a healthy investment for financially strapped school districts to purchase substantial numbers of machines and programs at one time. And so, cost is another hurdle. In many communities, however, parents are finding ways to get computers into the schools. Through bake sales, car washes, auctions and the like they raise money to insure that their children won't be left out. Even teachers have gotten into the act. In 1981, a sixth grade teacher in California took out a personal loan of $15,000 to buy his students computer equipment and programs. "It was worth every penny," he said, "to see the excitement in my kids' eyes and witness the growth they've experienced as a result of working with a microcomputer."

Federal legislation to give computer companies a tax writeoff of up to 200 percent of manufacturing costs for machines donated to public schools was pending in the Congress in early 1983. Proponents of the so-called "Apple bill" claimed more than 100,000 new computers would be put into schools almost overnight if the proposal were enacted. Opponents contended passage would saddle schools with machines they did not know how to use while companies received subsidies for dumping products they could not sell.

Finally, there are "software" problems. "Software" is the term computer aficionados use to refer to the programs that make the machines or "hardware" function as they do. Vicki Blum, a researcher at Columbia University's Teacher's College, recently examined a number of the larger computer curriculum programs available from leading publishers and concluded:

- Few programs teach concepts; most are multiple choice, drill and practice oriented.
- Most program objectives don't include higher-order skills such as comprehension, application, synthesis and evaluation.
- Graphics are rarely used.
- Most are mathematics programs.
- Few programs are designed for high school use.
- Major emphasis is on the recall of previously learned facts.

According to Marc Tucker, director of the Carnegie Corporation-funded Project on Information Technology and Education, the lack of good software is the predominant problem in the education computer field. "Up to this point," he says, "the new technologies have been used in the main to push facts into students — what Mao Tse Tung called 'stuffing the duck'."

Forces for Change

And so, there apparently aren't enough qualified teachers, either in the classrooms

or the pipelines; the social consequences of inequitable learning opportunities could prove divisive; and the shiny new tin cans often are filled with half-baked beans. Despite these problems, however, a number of forces appear to be converging to move the nation's schools and colleges inevitably into the computer age.

The most obvious of these is pressure from the business community. As computers increasingly become primary work tools, business leaders will increasingly demand that prospective employees be as familiar with them as today's prospective secretary or machinist is expected to know how to operate a typewriter or metal lathe.

Second, as more and more households are equipped with microcomputers, more and more parents will demand that their children have opportunities to learn about them at school.

Third, as already noted, teachers seem willing to accept them and learn how to use them. Many teachers undoubtedly will welcome a device that relieves them of routine chores such as drilling students on basics and gives them the freedom to be more creative.

Finally, most students seem to take to computers with eagerness, confidence, even panache. In the end, that may well prove to be the most telling force of all.

Some Sanguine Speculations

If Joel Birnbaum, Seymour Papert and others are correct about how microcomputers could enhance education, their inferences have exciting implications for the future of learning.

Combining their optimistic outlooks with social forecaster John Naisbitt's contention that every acceptable advance in high technology must have a countervailing human "high touch" counterpart makes it possible to speculate that by the turn of the century:

- Students, aided by friendly, hand-held personal computers, will be more independent, more "turned on" to learning and thus more willing and able to move beyond the mundane to explore the exciting and creative aspects of once-dull subjects.
- Teachers will find that the tiny machines which have relieved them of so much instructional tedium also have piqued the curiosity of their students, thereby providing a more receptive and responsive audience.
- Classes, no longer virtually the only mode of instruction, will be more exciting, both because students will welcome human interaction as an alternative way of learning and because teachers will find greater stimulation in concentrating on the enrichment aspects of subjects for students who are eager to learn.
- Schools, although only one of many places where learning will take place, will continue to be the linchpin of education, for they will be where it all comes together — where teacher and learner will join in human and humane juxtaposition, adding a "high touch" component to subjects introduced through electronic technology and providing a setting for the exploration of subjects that require interaction with people or special equipment, such as laboratory experiments, public speaking, physical education and drama.
- Learning, no longer something imposed by someone else, restricted to a prescribed curriculum and limited to a certain time and place, no longer dull and unexciting, will become an integral part of daily life, readily available on call.

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Part Three

The Human Future
. . . or Non-Future

CHAPTER SEVEN

It Takes A Lifetime

Learning by adults is a natural continuation of earlier learning and an integral part of all life experience.

— New York Board of Regents
State Goals for Adult Learning Services

Adult education in the United States is elitist and getting more so.

— K. Patricia Cross
Growing Gaps and Missing Links

It used to seem simple. "Education" was considered to be little more than a matter of spending a few early years acquiring certain predetermined minimum skills and one was set for life.

But learning doesn't begin with kindergarten or preschool, nor does it end upon high school or college graduation. Although we commonly consider "education" as a process that takes place in school or college, in truth, the greater part of learning occurs outside the classroom or laboratory — in the home, the community, at work and play. In Colonial America, schools were regarded as but one of many educational institutions. The family, church, farm and shop were of equal if not greater importance in imparting knowledge. Our traditional perception of education as almost totally school-related is barely 100 years old.

One of the hallmarks of an information society is continuous change. To adapt, people are going to have to alter their concept of education. It can no longer be regarded as something that can be prepackaged, consumed at one sitting or series of sittings over a limited period of time and digested sufficiently to last a lifetime. Instead, it is becoming an uninterrupted lifelong process, a journey rather than a destination.

Although the phrase "lifelong learning" properly refers to learning from "cradle to grave," it most commonly is used to refer to learning by persons beyond the age of compulsory schooling who are not full-time students. Such "adult education" can be organized or self-directed, formal or informal. It ranges from an individual sitting down alone with a self-help book to groups of adults in classrooms, community centers and church basements pursuing learning for career or personal enrichment.

The diversity and magnitude of such adult education endeavors defies quantification. Researchers estimate that more than 80 percent of the adult population carries out some kind of learning project each year and between 20 and 40 percent participate in some kind of organized learning activity.

As the American population ages — by the year 2000 the median age will have risen from 30 to more than 37 — employment will increasingly be linked to knowledge and leisure will be less and less an unskilled activity. As a result, adult education promises to become of greater concern to more people.

Adult Education Today

Paul Barton, vice president for planning and development at the National Institute for Work and Learning, points out that until recently adult education activities served primarily two kinds of clientele: young adults seeking to complete their high school diploma requirements and older citizens seeking enrichment and life-enhancement opportunities. Now, as America makes the transformation from an industrial to an information society, a third group has emerged: citizens in their "middle years" who seek utilitarian training or retraining linked to employment.

Three kinds of adult learning opportunities currently are available:

- Organized instruction, for academic credit or noncredit, conducted by schools, colleges, community groups, public agencies or private organizations.

- Instruction provided employees by business and industry, both in basic skills and as preparation for more advanced work assignments.
- Individual instruction, either self-directed or through home study correspondence courses.

A 1982 staff report of the California Postsecondary Education Commission summarizes what is known about adult learners in America today: Most are young, anglo and well-educated. The greater their level of education, the more likely they are to engage in adult learning. They tend to live in urban or suburban areas. The majority are women; while overall participation in adult learning has increased gradually over the past two decades, the number of adult women learners is increasing more than twice as fast as men. Most adult learners prefer traditional instructional techniques, with conventional lecture-based college courses consistently ranking first among preferred learning methods.

Adult learners show a strong preference for evening courses taught during the week in high school or college settings. About 40 percent of adult learners take courses for academic credit, although anglos are less likely than other groups to seek credit for their adult learning experiences. Two- and four-year colleges are the most frequently used sources of instruction. (The number of colleges and universities offering noncredit courses has more than doubled in recent years.)

In his book, *Worklife Transitions: The Adult Learning Connection,* Paul Barton describes no less than a dozen different kinds of adult learning opportunities that are readily available today. These can be divided into five categories:

1. *Traditional* — Schools and colleges, including vocational, trade and business schools, that offer everything from adult basic education to part-time graduate study.
2. *Business-related* — On-the-job education and training by business and industry, a multi-billion dollar effort involving millions of workers every

year, plus training opportunities offered by labor unions and professional associations.

3. *Government-related* — Education and training opportunities for local, state and federal government employees, plus a variety of federal employment and training programs and agricultural education programs provided through the Cooperative Extension Service.
4. *Community-related* — Programs offered by churches, Y's, the Red Cross, civic, social service and cultural organizations, plus so-called free schools and universities.
5. *Individual focus* — Although most adult education requires some

An Exercise in Experiential Learning

One of the most unusual lifelong learning programs available today is Outward Bound, an educational program for youths and adults that combines strenuous physical and mental development in remote wilderness areas.

Since the concept came to America in 1961, more than 90,000 people have graduated from Outward Bound programs conducted by independent, nonprofit

Photo courtesy of Outward Bound

schools in eight states — Colorado, New Hampshire, New Mexico, Maine, Minnesota, North Carolina, Oregon and Wyoming.

Founded to teach the skills of clear and confident thought, communication and survival, Outward Bound provides different programs for students, business executives, the handicapped, alcoholics, prisoners, and delinquents.

An experienced-based approach to self-discovery and personal growth, Outward Bound uses wilderness challenges as its teaching medium. Participants are presented with a series of increasingly difficult physical and mental problems. They must call upon unrecognized reserves of individual strength and perseverance to survive. At the same time, the student learns the necessity and rewards of working well with other people.

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gree of individual initiative, two have a distinct individual focus — correspondence instruction and private instruction, either alone or one-on-one with a tutor.

Three Problems

Leaders of a lifelong learning project at the Education Commission of the States (ECS) have identified three problems with adult education in America today:

- It's inequitable. According to K. Patricia Cross, who heads the ECS project's planning board, "Between 1969 and 1975 adult learning activities for the college-educated increased almost twice as fast as for high school graduates and the participation for anglos increased eight times as fast as that for blacks. The education gap between the 'haves' and 'have nots' is increasing." Cross, a research scientist for the Educational Testing Service and visiting professor at the Harvard Graduate School of Education, claims, "There is probably more opportunity now for disadvantaged young people to gain access to college than for older disadvantaged adults to continue the kinds of education that would be useful to them."
- Little is being done to match the learning needs of low-income or minority adults with existing adult learning opportunities. Adults who "venture into the thicket of available education and training opportunities in search of needed employment skills or personal development opportunities run serious risks of possible frustration and disappointment," says William Hilton, director of the ECS project. "We need a blind date matching service," he adds. Cross believes that "brokering services and education information centers constitute our greatest hope for shaping the learning society to serve the needs of a democratic society."
- Education policymakers are youth-oriented. Service to adult learners is seldom on their agenda. There has never been a public commitment to support adult education in a manner

Adult Learning in the Year 2000

If the eight goals for adult learning services that have been adopted by the New York Board of Regents were to be expressed as present-tense reality, a vision of what adult learning could be in the year 2000 emerges:

- **Learning by adults is recognized, encouraged and supported as a matter of public policy.**
- **Learning occurs in the home and throughout the community at places and times convenient to adult learners.**
- **Providers of services collaborate to assure a full range of offerings and effective use of resources.**
- **New learning technologies are widely used at home and at work.**
- **All adults who need basic skills instruction receive it free of charge.**
- **Information and guidance services are readily available.**
- **Informed consumer choice assures high quality services from all providers.**
- **Appropriate recognition for learning is provided, so that however achieved, educational accomplishments can be validated and used for occupational advancement or entry to advanced study.**
- **While adult learners and the private sector provide most of the support for adult learning opportunities, public funding plays a key role in assuring the availability of basic services and access to them.**

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anywhere comparable to the commitment to educate children. Although Congress in 1978 enacted legislation designed to make available "appropriate opportunities for lifelong learning for all," no funds have ever been appropriated. "Too many policymakers see adult learning as a luxury — something you do after taking care of basic learning," observes Hilton.

Future Prospects

The future course of adult learning in America appears to depend in large part on the attitude and actions of public policymakers. If they continue to be obtuse about the growing importance of lifelong learning, Cross' concerns about the growing gap between the advantaged and disadvantaged could result in a divisive national tragedy. This could be averted, however, if policies are adopted to make it possible for Americans from all walks of life to move easily in and out of organized learning activities that are affordable, tailored to their needs and available at convenient times and places.

At the top of the public policy agenda to help bring this about could be the formation of what Hilton calls "statewide information and guidance systems" for "preventive education" characterized by five features:

1. Emphasis upon helping learners better understand themselves, their unique skills and interests.
2. Availability of current and objective information on the full range of public and private instructional opportunities and support services that might be available to them at any time.
3. Provision of consumer protection information designed to enable individuals to judge what is or is not a quality educational experience for them.
4. Reliable projections of the long-term validity of certain career and educational choices.
5. For those who need it, help in relating what they know about themselves to available education and training opportunities.

The ECS project is working with a number of states to help bring this kind of system into being. Kansas, for example, has completed a comprehensive study of what adult learners are seeking and what's available; Ohio is developing linkages between colleges and universities and the business community; New York has adopted eight goals for adult services in the year 2000 and bills have been introduced in the state legislature to implement them.

Meanwhile, new communications technologies promise to change the character of adult learning delivery systems in the years ahead. The University of Mid-America, for example, uses television to broadcast courses to 4,000 students in a multi-state region of the Midwest. And more than 500 colleges and universities have agreed to make academic credit available to adults who enroll in television courses offered through the Public Broadcasting Service.

The National Home Study Council, in a 1982 report, foresees significant growth in adult learning outside traditional classrooms, what it calls "distant education."

Through the use of video tapes, video discs, cable television, personal microcomputers and telephone satellite hookups, the Council anticipates the development of low-cost study packages that will make it possible for adults to learn what they want at times and places of their own choosing.

Creating integrated learning systems by combining new technologies with traditional tools such as books and blackboards may help pave the way to a new definition of education: a journey that takes a lifetime.

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CHAPTER EIGHT

Forces Reshaping Values

If morality occupies a natural and necessary position in the affairs of civilized humankind, and is not the exclusive province of organized religion, then it is the common responsibility of all men and women to accept the teaching of moral values in a system of public education.

— T. H. Bell
Values and Morality

We ill serve ourselves or our children by preparing ourselves or them for a life of freedom and easy pleasure that may never come, and that will certainly never last. We had better prepare ourselves and them for reality, for a reality that is infused with values no less than with facts, with moral laws no less than physical laws.

— John R. Silber
The Gods of the Copy Book Headings

Willis Harman, widely respected Stanford University scientist and futurist, believes that four important influences on American society and American education over the next decade or so will involve questions of values. "I think that value issues are much more essential to education in the near-term future than they have been in the near-term past," Harmon said at an Urban Ed 2000 conference in March 1982.

The four influences cited by Harmon are:

- New technology, particularly computers "that can act in certain ways like human beings."
- The global situation, "in which we're going to have to think about ourselves as a whole human population living on a rather small planet."
- New explorations into consciousness and the unconscious mind.
- A decade or so of restructuring, "and transition periods have their price."

Examples of values questions associated with new technologies, according to Harman, include whether or not to continue developing nuclear power, who should decide what new species should be created through genetic engineering and what's the worth of human beings when computers can do better, faster and cheaper most tasks that a human can be *trained* to do by step-by-step instructions.

As for global developments, Harman noted that if our objective is to bring nonindustrialized countries up to our level of consumption, "then we have a pretty serious resource and environmental problem. . . ." And yet, he added, there are strong indicators that "there will be no peace on the globe as long as there is mass poverty, as long as there are severe and increasing income disparities between the very rich and the very poor and as long as

The Morality of Genetic Engineering

Some genetic engineering morality issues already exist; others are just around the corner.

Several women with fertility problems are known to have become pregnant from the sperm of Nobel Prize-winning scientists. The sperm, available from the Repository for Germinal Choice in California after intensive screening of the woman by a panel of three doctors, is inserted into her uterus over a four-day ovulation period.

The concept of deliberately breeding unusually talented children through the use of "designer genes" has triggered criticism and controversy. Arthur Caplan of the Hastings Center, a New York institution that studies the ethics of biological and medical issues, believes "most scientists are skeptical about the validity of the whole approach. And from an ethical perspective the concept is little more than escapism. We should be trying to bring out the best in all people by improving our schools rather than getting involved in a genetic crapshoot to breed super people," Caplan says.

Although genetic engineering could lead to the elimination of human genetic defects, the eradication of inheritable illnesses and the production of crops that flourish under difficult conditions, it might also be used to create sub-human hybrids for use as slaves, a presidential commission warned in 1982.

"Those who believe that the current treatment of animals — in experimentation, food production and sport — is morally suspect would not be alone in being troubled by the prospect of exploitive or insensitive treatment of creatures that possess even more human-like qualities than chimpanzees or porpoises do," the report said.

Robert Sinsheimer, chancellor of the University of California at Santa Cruz and one of the nation's leading genetic researchers, says the ability to alter plants, animals and humans is imminent and Americans must begin thinking about how to deal with the social consequences.

Sinsheimer, who is said to have come closer than anyone to creating life in the laboratory, believes Americans should come to an agreement on how far they want such research to continue in the next several decades.

the majority of the population on the earth don't feel that they're getting a fair deal or that they have any chance really to be in control of their own destiny."

Advances in the neurosciences, in exploring the nature of the human mind, raise entirely different value questions, Harman said. Findings in consciousness research, for example, suggest that existing educational procedures fail to develop adequately intuitive or unconscious thinking. "We're going to go through a dramatic change with regard to this matter," Harman predicted, "and we're going to come to appreciate that in a certain sense the most competent, the most wise, the most creative parts of our minds are largely unconscious."

In addition, he said, we now have survey data that indicates a recent shift toward more concern with inner-directed values and less emphasis on status and economic values. That shift involves a fairly sizable group of people, Harman said, perhaps a fifth or quarter of the nation's adult population. "Something remarkable is happening in our belief system," he observed.

One of the hallmarks of a period of profound change, Harman added, is when the most basic beliefs about the very nature of human beings and the nature of the human mind and its relation to the universe become challenged by people "who were trained in the right answers to those questions." This is what is happening in our post-industrial society, he said — change as fundamental as the end of the middle ages, only it's coming far more rapidly now because of instantaneous global communications.

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Significantly, this change in belief about the nature of the human mind is being stimulated by important segments of the science community — precisely those who for so long were considered, and considered themselves, immune to anything, such as values, that seemingly could not be substantiated by empirical measurement. But now some scientists, notably Nobel Prize winner Roger Sperry of the California Institute of Technology, are asserting that "a scientific approach to both the theory and prescription of ethical values is not only feasible, but is by far the best way to go, offering the most promising, perhaps only, visible hope for future generations."

As a social problem, Sperry believes, "human values can be rated above the more tangible global concerns such as poverty, pollution, energy and overpopulation on the ground that these more concrete problems are all man-made and are very largely products of human values. Further, they are not correctable on any long-term basis without effecting adaptive changes in the underlying human values involved."

Sperry anticipates "a natural fusion of science and religion" that will "set in motion the kind of social changes needed to lead us out of the vicious spirals of increasing population, pollution, poverty, energy demands, etc."

Values Neglected

Harman and others have noted that for the past 50 years or so American schools and colleges have neglected the teaching of values because values seemed to have no scientific basis.

Steven Muller, president of Johns Hopkins University, believes "the biggest failing in higher education today is that we fall short in exposing students to values... This situation came about because the modern university is rooted in the scientific method, having essentially turned its back on religion. I am not hostile to the scientific method — it is a marvelous means of inquiry, and it has been highly productive — but it really doesn't provide a value system."

Harman believes that about 1950 "there occurred one of the most remarkable value shifts in all history." At that time, the basic American value shifted from frugality to consumption, Harman says. "We invented something called planned obsolescence and we stopped calling one another citizens and we began to refer to one another as consumers."

Overindulgence in consumption undoubtedly contributed to what Yankelovich terms the ethic of self-fulfillment. Toffler calls it the acquisitive ethic of an advanced Second Wave civilization and notes that it gave rise to a narrow economic definition of personal success.

The Tide Changes

In the 1970s a variety of forces converged to bring about the beginning of a changing tide. The transition from an industrial to an information society has stimulated a discernible shift in personal values, Toffler

believes, a shift from a "market ethic" to "prosumerism," marked by a phenomenal increase in self-help and do-it-yourself activity. "Instead of ranking people by what they own, as the market ethic does, the prosumer ethic places a high value on what they do," Toffler writes in *The Third Wave*. "Having plenty of money still carries prestige. But other characteristics count, too. Among these are self-reliance, the ability to adapt and survive under difficult conditions and the ability to do things with one's own hands. . . ."

Yankelovich, of course, sees a shift from an emphasis on self-fulfillment to an "ethic of commitment," in which people are increasingly concerned about their relationships with others and their role in society.

At the same time, the moral unrest that sprang from Vietnam, Watergate and corporate corruption sparked renewed interest in values education in American elementary and secondary schools.

From the mid-1970s, the annual Gallup poll on American education has indicated that nearly 80 percent of the people surveyed favored "instruction in the schools that would deal with morals and moral behavior." The Social Science Education Consortium in Boulder, Colo., compiled a 260-page sourcebook that identified six different approaches to values education and the books, articles, newsletters, films, filmstrips, records and tapes that had been produced to help explain and promote them.

The most controversial of these is a teaching method known as values clarification, which was developed in the 1960s and early 1970s by social scientists Louis Raths, Merrill Harman and Sidney Simon. The focus of values clarification is to help students use both rational thinking and emotional awareness to examine their personal behavior patterns and clarify their values. Teachers are not supposed to take sides or indoctrinate students in values positions. Teaching methods often involve large- and small-group discussions of hypothetical, contrived and real moral dilemmas. Teaching strategies include helping students choose from among available alternatives, helping students reflect on the consequences of each alternative, encouraging students to make choices freely, providing students with opportunities to make public affirmations of their choices and encouraging students to act, behave and live in accordance with their choices.

Critics of the values clarification approach find fault with it on a number of counts, including:

First, despite what its proponents claim, values clarification is not values neutral. Many teachers encourage, even exhort students to "narcissistic self-gratification," critics claim.

Second, by asserting the complete relativity of all values, teachers in effect equate values with personal tastes and preferences.

Third, because values clarification presents the individual self as the final arbiter of value, a direct contradiction of the Biblical view, critics contend that values clarification has become a kind of religion in its own right, competing directly with other religious views.

In September 1982 the National Institute of Education, the federal government's education research agency, announced plans for a study of values clarification teaching techniques and their effects on students.

Moral Development

Perhaps the most highly regarded new approach to values education, at least within the education community, is that of Lawrence Kohlberg, a Harvard psychologist who claims that moral development, like intellectual development, is a natural process that teachers can nurture in children. Kohlberg has adapted Piaget's theories of cognitive development to moral reasoning. He has identified six stages of moral development:

- Obedience and punishment — Children up to about the age of seven have

no respect for authority or values. They obey out of fear.

- Back-scratching — Although children still believe it is right to have their immediate needs fulfilled, they also seek rewards or to have their favors returned.
- Conformity — Good behavior is that which pleases or helps others and is approved by them.
- Law and order — At this stage, early adolescence, what is right is doing one's duty, showing respect for authority.
- Social contract — Proper action is defined in terms of the general rights of individuals as agreed upon by the whole society. The U.S. Constitution is a stage-five document, Kohlberg claims.
- Universal principles — Morality based on adherance to self-chosen principles of justice. Kohlberg cites Socrates, Mahatma Gandhi and Martin Luther King Jr. as examples of stage-six morality.

Kohlberg's theory holds that each stage in moral reasoning is psychologically and philosophically more mature than the previous stage.

Kohlberg's critics question the validity of his six stages, disagree that all children must go through each of them sequentially and point out that values educators frequently create artificial situations that have little to do with real life experiences.

Inculcation

A third approach to values education, one that seems to be gaining increased support in the early 1980s, is more traditional, even "old fashioned." It's called Inculcation and, as the label implies, it's a straightforward process whereby a teacher instills upon students values and standards that are deemed socially desirable. Unlike values clarification, students are considered reactors rather than initiators. Advocates of Inculcation believe that the needs and goals of society transcend and even define the needs and goals of individuals.

One of the most widely used elementary school Inculcation curriculums is "Character Education," produced by the American Institute for Character Education in San Antonio, Tex., and distributed by the Thomas Jefferson Research Center in Pasadena, Calif. While it employs a good deal of group discussion, including encouraging students to state alternative solutions to problems, and porports to help children develop their own sense of values, in the end it requires teachers to inculcate

Return to McGuffey

In a small southwestern Virginia school district children are learning to read from a series of textbooks that emphasize honesty, patriotism, kindness, punctuality and persistence.

The series of basic readers, first published in 1836, were for 80 years the textbooks from which 80 percent of all Americans learned to read.

They are *McGuffey's Eclectic Readers,* a series originally compiled by William Holmes McGuffey, a scholar, educator and minister who died in 1873.

"We felt that the children needed more values like patriotism and honesty, that modern basal readers were watered down too much," says Evelyn Murray, supervisor of the reading program in the Bristol, Va., public schools.

***McGuffey's Readers* place heavy emphasis on such themes. They teach reading through a series of self-improvement stories and poems drawn from a variety of authors.**

Bristol apparently isn't the only school district that's returning to the McGuffey series. Publishers that keep the books on their list reported in early 1983 that annual sales had climbed from 4,000 copies to 20,000 since 1975.

students with predetermined values such as "politeness, helpfulness, generosity and kindness to peers and adults in their classrooms."

Assessing Community Needs

Although most Americans apparently want and expect their schools to play an important role in the moral education of children, and futurists anticipate the need for a more value-oriented citizenry, many local school districts have been reluctant to establish values education programs for fear of alienating segments of the community.

In 1978, Phi Delta Kappa, a professional education fraternity, identified a number of concerns confronting educators. Among them was how, in a pluralistic society, public schools could become involved in teaching morals, values and ethics. To help schools determine the core values upon which such a program could be developed, PDK established at Ohio State University a project to produce community survey instruments. The result is a combination of community values assessment procedures that provide local school policymakers with a sense of the shared values of their community, which values people feel are important but lacking and which should be transmitted in schools.

With such information local school leaders can develop a values education program that will have widespread community support and, not incidently, restore local schools to a position of community leadership.

One State's New Priority

Improved education is the first step in getting Mississippi off the bottom rung of the nation's economic ladder.

That's the message Gov. William Winter had been preaching for several years.

Finally, just before Christmas 1982, after a 16-day special session, the Mississippi legislature approved a $106 million package of education reforms.

Mississippi at the time had the nation's lowest per capita income and ranked first among the states in infant mortality, teen-age pregnancy and birth defects. The U.S. Army was rejecting 35 percent of Mississippi volunteers for failing standardized intelligence tests. The national failure rate was nine percent.

In education, the state had the highest dropout rate in the nation, the lowest salaries for teachers and ranked among the lowest in per pupil expenditures. In addition, it was the only state without a statewide public kindergarten program.

Gov. Winter described the 1982 education reform law as a "monumental education and economic development program."

Its major provisions include:

- Mandatory public kindergartens by 1986.
- Stiff penalties to enforce the state's compulsory attendance law.
- Creation of commissions to raise teacher education and certification standards and to develop a system for accrediting schools on the basis of performance.

Despite a poor economic climate, the Mississippi legislature voted for increased sales and income taxes to pay for the sweeping education reforms.

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Plowing Back

Everybody must give something back for something they get . . .
— Bob Dylan
Fourth Time Around

People, get ready . . .
— The Impressions

Every farmer knows you have to plow back into the soil at least as much as you take out or it doesn't keep working for you. For some time, during our phase of mass production and specialization, we have developed a rationale for not concerning ourselves with the "whole picture" or being responsible for the consequences of our actions.

There is no need here to burden our readers by paraphrasing the many credible analyses of our social ailments which already exist in the literature. Without praise or blame for past action or inaction, our children would like to face the future with joyous anticipation and without fear. The gift of life did not come with an insurance policy, but it did come complete with instructions locked deep in the collective intelligence of humanity. There is every indication that we are nearing readiness for a quantum leap of understanding and communication, a level jump that will replace our weary insecurities with attractive new options for the expression of life.

Much of human nature seems to follow fashion. If so, we need not wait for everyone to be ready to create a more sensible life. We need only network an initiative of informed and responsible leaders who are willing to co-author a hopeful future. In setting a new fashion for others to follow, we will enrich our cultural heritage.

We cannot expect the schools alone to solve all of society's problems. The schools did not create those problems and the schools can't solve them — but they can help, along with a community where all citizens are willing to contribute money, time and energy. If you'd like to become involved, please contact us.

The human future — or nonfuture — will be determined by the quality of our educational environment.

— Franklin Mullen
Chairman, Urban Ed 2000

Additional Reading

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_____ government worker

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